Order No: MAC0010058C2

Service Manual

Room Air Conditioner

CS-MA95KE CU-MA185KE / CS-MA125KE CU-MA245KE / CS -MA75KE / CS-MA125KE CU-MA195KE

Panasonic
COOL
25
TEMP
OFF/ON
POWERFUL
Panasonic

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

⚠ PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigeration circuit.

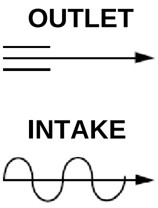
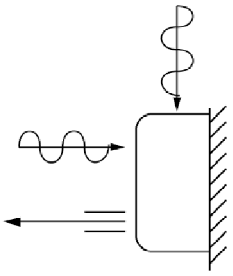
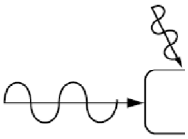
1. Features

- High Efficiency
- Compact Design
- Comfort Environment

- 8 hours of sleep mode operation
- Air filter with function to reduce dust and smoke
- Wider range of horizontal discharge air
- Auto Restart
- Random auto restart after power failure for safety restart operation
- Removable and Washable Front Panel
- Remote Control Self-illuminating Button
- Catechin Air Purifying Filter
- Trap dust, tabacco smoke and tiny particles
- Prevent the growth of bacteria and viruses trapped
- Deodorizing Air Purifying Filter
- Remove unpleasant odors from the air
- Quality Improvement
- Gas leakage protection
- Prevent compressor reverse cycle
- 2-stage OLP to protect compressor
- Noise prevention during soft dry operation.
- Service Improvement
- Easy fan motor replacement procedure
- Operation Improvement
- Economy mode to reduce electrical power consumption
- Powerful mode to reach the desired room temperature quickly
- Long Installation Piping
- Long piping up to 15 meter

2. Functions

3. Product Specifications

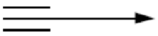
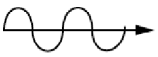
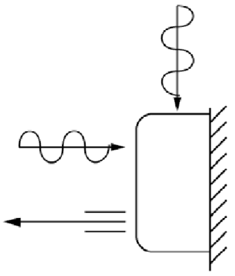
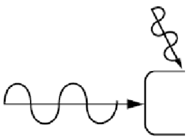
		Unit	CS-MA75KE, CS-MA125KE	CU-MA1
Cooling Capacity		**kW** **kcal/h**	**2.05 - 2.00, 3.50 - 3.45** **1760 - 1720, 3010 - 2970**	
Heating Capacity		**kW** **kcal/h**	**2.15 - 2.10, 4.10 - 4.00** **1850 - 1800, 3530 - 3440**	
Moisture Removal		**l/h** **Pint/h**	**1.3, 2.0** **2.7, 4.2**	
Power Source		**Phase** **V** **Cycle**	**Single** **230 - 220** **50**	
Airflow Method			**SIDE VIEW** 	**TOP VI** 
			Cooling; 6.7 (240) - 6.5 (230),	

Air Volume	**Indoor Air (Lo)**	**m3/min (cfm)**	**6.8 (240) - 6.4 (230)** **Heating; 7.0 (250) - 6.9 (240),** **8.6 (300) - 8.3 (290)**	**—**
	Indoor Air (Me)	**m3/min (cfm)**	**Cooling; 7.0 (250) - 6.9 (240),** **8.6 (300) - 8.3 (290)** **Heating; 8.5 (300) - 8.4 (300),** **9.6 (340) - 9.5 (340)**	**—**
	Indoor Air (Hi)	**m3/min (cfm)**	**Cooling; 8.5 (300) - 8.4 (300),** **9.6 (340) - 9.5 (340)** **Heating; 9.5 (330) - 9.5 (330),** **10.2 (360) - 10.2 (360)**	**—**
	Indoor Air (SHi)	**m3/min (cfm)**	**Cooling; 9.5 (330) - 9.5 (330),** **10.2 (360) - 10.2 (360)** **Heating; 9.5 (330) - 9.5 (330),** **10.2 (360) - 10.2 (360)**	**—**
Noise Level		**dB (A)**	**Cooling; High 34-33, 39-39** **Low 26-26, 29-29** **Heating; High 36-35, 39-39** **Low 26-26, 29-29**	**Cooling; High 48 (51-** **Heating; High 48 (52-**
Electrical Data	**Input**	**W**	**Cooling; 660 - 600, 1,250 - 1,22** **Heating; 640 - 600, 1,280 - 1,23**	
	Running Current	**A**	**Cooling; 3.2 - 3.0, 5.6 - 5.7** **Heating; 3.1 - 3.0, 5.7 - 5.7**	
	EER	**W/W (kcal/hw)**	**Cooling; 3.11 - 3.33 (2.67 - 2.87), 2.80 - 2. 2.43)**	
	COP	**W/W (kcal/hw)**	**Heating; 3.36 - 3.50 (2.89 - 3.00), 3.20 - 3. 2.80)**	
	Starting Current	**A**	**13, 25**	

Piping Connection Port (Flare piping)			**inch inch**	**G ; Half Union 3/8”, 1/2” L ; Half Union 1/4”, 1/4”**	**G ; 3-way valv L ; 2-way valv**
Pipe Size (Flare piping)			**inch inch**	**G ; (gas side) 3/8”, 1/2” L ; (liquid side) 1/4”, 1/4”**	**G ; (gas side) L ; (liquid side**
Drain Hose	**Inner diameter**		**mm**	**12**	**—**
	Length		**m**	**0.7**	**—**
Power Cord Length			**m**	**2.0**	**—**
Number of core-wire				**3 (1.0 mm^2)**	**—**
Dimensions	**Height**		**inch (mm)**	**10 - 31/32 (279)**	**39 - 31/32**
	Width		**inch (mm)**	**31 - 15/32 (799)**	**30 - 23/32**
	Depth		**inch (mm)**	**7 - 27/32 (199)**	**9 - 21/32**
Net Weight			**lb (kg)**	**20 (9.0)**	**159 (7**
Compressor		**Type**		**—**	**Rotary (1 c rolling pist**
	Motor	**Type**		**—**	**Induction (**
	Rated	**Output**	**W**	**—**	**500, 1,**
Air Circulation		**Type**		**Cross-flow Fan**	**Propelle**
		Material		**AS + Glass Fiber 30%**	**AES + Glass**
	Motor	**Type**		**Induction (4-poles)**	**Induction (**
		Input	**W**	**20.6 - 19.1, 28.7 - 27.1**	**65.8 × 2 - 5**
	Rated	**Output**	**W**	**(1 unit) 20**	**(2 units)**
	Fan Speed	**Low**	**rpm**	**820 - 780, 890 - 835**	**—**
		Medium	**rpm**	**855 - 825, 1125 - 1075**	**—**
		High	**rpm**	**1040 - 1005, 1260 - 1235**	**—**
		SuperHigh	**rpm**	**1160 - 1140, 1340 - 1330**	**—**
Heat Exchanger	**Description**			**Evaporator**	**Conden**
	Tube material			**Copper**	**Copp**
	Fin material			**Aluminium**	**Alumini**
	Fin Type			**Slit Fin**	**Corrugat**
	Row / Stage			**(Plate fin configuration, forced dr**	
				2 × 14, 2 × 14	**1 × 18, 2**
	FPI			**18, 21**	**19, 1**
	Size (W × H × L)		**mm**	**614 × 294 × 25.4**	**856×457.2×22 7 ×44 66**
Refrigerant Control Device				**—**	**Capillary**
Refrigeration Oil			**(c.c)**	**—**	**SUNISO 4G ATMOS M60 (**
Refrigerant (R-22)			**g (oz)**	**—**	**860 - 1160, 3**
Thermostat				**Electronic Control**	**—**
Protection Device				**—**	**Overload P**
Capillary Tube	**Length**		**mm**	**—**	**Cooling;920,81 590,5**
	Flow Rate		**l/min**	**—**	**Cooling;4.0,7. 8.2,12**
	Inner Diameter		**mm**	**—**	**Cooling;1.1,1. 1.3,1.**

Air Filter	**Material** **Style**	**(c.c)**	**P.P.** **Honeycomb**	**—**
Capacity Control			**Capillary Tube**	
Compressor Capacitor		**µF, VAC**	**—**	**15 µF, 440VA** **440VA**
Fan Motor Capacitor		**µF, VAC**	**1.5 µF, 400VAC**	**1.2 µF, 400V** **F, 400V**

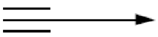
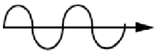
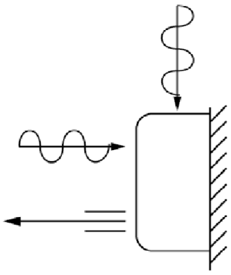
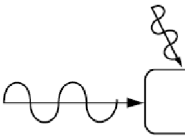
- Specifications are subject to change without notice for further improvement.

	Unit	CS-MA95KE	CU-MA1
Cooling Capacity	**kW** **kcal/h**	**(1 unit) 2.65 - 2.60** **(1 unit) 2280 - 2230**	**(2 units) 2.65 ×** **(2 units) 2280 ×** **2**
Heating Capacity	**kW** **kcal/h**	**(1 unit) 3.15 - 3.00** **(1 unit) 2710 - 2580**	**(2 units) 3.15 ×** **(2 units) 2710 ×** **2**
Moisture Removal	**l/h** **Pint/h**	**(1 unit) 1.6** **(1 unit) 3.4**	**(2 units) 1** **(2 units) 3**
Power Source	**Phase** **V** **Cycle**	**Single** **230 - 220** **50**	
Airflow Method	**OUTLET**  **INTAKE** 	**SIDE VIEW** 	**TOP VI** 

Air Volume	**Indoor Air (Lo)**	**m3/min (cfm)**	**Cooling; 6.9 (240) - 6.4 (230)** **Heating; 6.9 (240) - 6.4 (230)**	**—**
	Indoor Air (Me)	**m3/min (cfm)**	**Cooling; 8.0 (280) - 7.7 (270)** **Heating; 8.0 (280) - 7.7 (270)**	**—**
	Indoor Air (Hi)	**m3/min (cfm)**	**Cooling; 9.8 (350) - 9.7 (340)** **Heating; 10.4 (370) - 10.5 (370)**	**—**
	Indoor Air (SHi)	**m3/min (cfm)**	**Cooling; 10.4 (370) - 10.5 (370)** **Heating; 10.4 (370) - 10.5 (370)**	**—**
Noise Level		**dB (A)**	**Cooling; High 39-38, Low 26-26** **Heating; High 39-39, Low 26-26**	**Cooling; High 4 51)** **Heating; High 4 50)**
Electrical Data	**Input**	**W**	**Cooling; (1 unit) 940 - 890** **Heating; (1 unit) 950 - 880**	**(2 units) 940 ×** **(2 units) 950 ×**
	Running Current	**A**	**Cooling; (1 unit) 4.1 - 4.1** **Heating; (1 unit) 4.2 - 4.1**	**(2 units) 4.1 ×** **(2 units) 4.2 ×**
	EER	**W/W (kcal/hw)**	**Cooling; 2.82 - 2.92 (2.42 - 2.51)**	
	COP	**W/W (kcal/hw)**	**Heating; 3.32 - 3.41 (2.85 - 2.93)**	
	Starting Current	**A**	**(1 unit) 20**	**(2 units)**
Piping Connection Port **(Flare piping)**		**inch** **inch**	**G ; Half Union 3/8”** **L ; Half Union 1/4”**	**G ; 3-way va** **L ; 2-way va**
Pipe Size **(Flare piping)**		**inch** **inch**	**G ; (gas side) 3/8”** **L ; (liquid side) 1/4”**	**G ; (gas si** **L ; (liquid si**
Drain	**Inner diameter**	**mm**	**12**	**—**
Hose	**Length**	**m**	**0.7**	**—**

Power Cord Length			**m**	**2.0**	**—**
Number of core-wire				**3 (1.0 mm^{2})**	**—**
Dimensions	**Height**		**inch (mm)**	**10 - 31/32 (279)**	**38 - 3/4 (**
	Width		**inch (mm)**	**31 - 15/32 (799)**	**30 - 23/32**
	Depth		**inch (mm)**	**7 - 27/32 (199)**	**9 - 21/32**
Net Weight			**lb (kg)**	**20 (9.0)**	**152 (6**
Compressor		**Type**		**—**	**Rotary (1 c rolling pist**
	Motor	**Type**		**—**	**Induction (**
	Rated	**Output**	**W**	**—**	**(1 unit) 750 (2 u 2**
Air Circulation		**Type**		**Cross-flow Fan**	**Propeller**
		Material		**AS + Glass Fiber 30%**	**AES + Glass**
	Motor	**Type**		**Induction (4-poles)**	**Induction (**
		Input	**W**	**29.0 - 27.5**	**65.8 × 2 - 5**
	Rated	**Output**	**W**	**(1 unit) 20 (2 units) 20 × 2**	**(1 unit) 20 (2 u**
	Fan Speed	**Low**	**rpm**	**875 - 800**	**—**
		Medium	**rpm**	**1025 - 965**	**—**
		High	**rpm**	**1250 - 1210**	**695 - 635, 7**
		SuperHigh	**rpm**	**1330 - 1310**	**—**
Heat Exchanger	**Description**			**Evaporator**	**Conden**
	Tube material			**Copper**	**Copp**
	Fin material			**Aluminium**	**Alumini**
	Fin Type			**Slit Fin**	**Corrugate**
	Row / Stage			**(Plate fin configuration, forced dr**	
				2 × 14	**1 × 1**
	FPI			**18**	**19**
	Size (W × H × L)		**mm**	**614 × 294 × 25.4**	**856 × 457.**
Refrigerant Control Device				**—**	**Capillary**
Refrigeration Oil			**(c.c)**	**—**	**SUNISO 4G ATMOS M60**
Refrigerant (R-22)			**g (oz)**	**—**	**890 × 2 (31**
Thermostat				**Electronic Control**	**—**
Protection Device				**—**	**Overload P**
Capillary Tube	**Length**		**mm**	**—**	**Cooling; 1,033 585**
	Flow Rate		**l/min**	**—**	**Cooling; 4.8, H**
	Inner Diameter		**mm**	**—**	**Cooling; 1.2, H**
Air Filter	**Material Style**		**(c.c)**	**P.P. Honeycomb**	**—**
Capacity Control				**Capillary Tube**	
Compressor Capacitor			**μ F, VAC**	**—**	**25 μ F, 3**
Fan Motor Capacitor			**μ F, VAC**	**1.0 μ F, 400VAC**	**(Upper unit) 400VAC (Lowe μ F, 400**

- Specifications are subject to change without notice for further improvement.

	Unit	CS-MA125KE	CU-MA24
Cooling Capacity	**kW** **kcal/h**	**(1 unit) 3.50 - 3.45** **(1 unit) 3010 - 2970**	**(2 units) 3.50 ×** **(2 units) 3010 ×** **2**
Heating Capacity	**kW** **kcal/h**	**(1 unit) 4.10 - 4.00** **(1 unit) 3530 - 3440**	**(2 units) 4.10 ×** **(2 units) 3530 ×** **2**
Moisture Removal	**l/h** **Pint/h**	**(1 unit) 2.0** **(1 unit) 4.2**	**(2 units) 2** **(2 units) 4**
Power Source	**Phase** **V** **Cycle**	**Single** **230 - 220** **50**	
Airflow Method	**OUTLET**  **INTAKE** 	**SIDE VIEW** 	**TOP VI** 

Air Volume	**Indoor Air (Lo)**	**m^3/min (cfm)**	**Cooling; 6.8 (240) - 6.4 (230)** **Heating; 6.8 (240) - 6.4 (230)**	**—**
	Indoor Air (Me)	**m^3/min (cfm)**	**Cooling; 8.6 (300) - 8.3 (290)** **Heating; 8.6 (300) - 8.3 (290)**	**—**
	Indoor Air (Hi)	**m^3/min (cfm)**	**Cooling; 9.6 (340) - 9.5 (340)** **Heating; 10.2 (360) - 10.2 (360)**	**—**
	Indoor Air (SHi)	**m^3/min (cfm)**	**Cooling; 10.2 (360) - 10.2 (360)** **Heating; 10.2 (360) - 10.2 (360)**	**—**
Noise Level		**dB (A)**	**Cooling; High 39-39, Low 29-29** **Heating; High 39-39, Low 29-29**	**Cooling; High 51)** **Heating; High 51)**
Electrical Data	**Input**	**kW**	**Cooling; (1 unit) 1.25 - 1.22** **Heating; (1 unit) 1.28 - 1.23**	**(2 units) 1.25 ×** **(2 units) 1.28 ×**
	Running Current	**A**	**Cooling; (1 unit) 5.6 - 5.7** **Heating; (1 unit) 5.7 - 5.7**	**(2 units) 5.6 ×** **(2 units) 5.7 ×**
	EER	**W/W (kcal/hw)**	**Cooling; 2.80 - 2.83 (2.41 - 2.43)**	
	COP	**W/W (kcal/hw)**	**Heating; 3.20 - 3.25 (2.76 - 2.80)**	
	Starting Current	**A**	**(1 unit) 25**	**(2 units)**
Piping Connection Port **(Flare piping)**		**inch** **inch**	**G ; Half Union 1/2”** **L ; Half Union 1/4”**	**G ; 3-way va** **L ; 2-way va**
Pipe Size **(Flare piping)**		**inch** **inch**	**G ; (gas side) 1/2”** **L ; (liquid side) 1/4”**	**G ; (gas si** **L ; (liquid si**

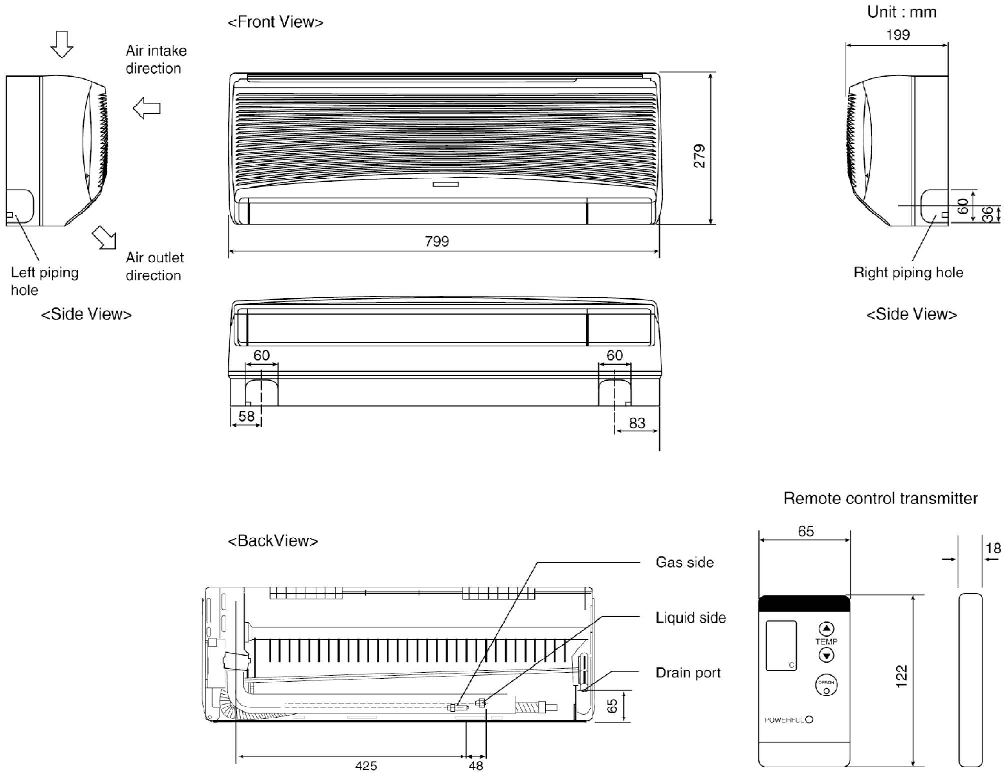
Drain	**Inner diameter**		**mm**	**12**	**—**
Hose	**Length**		**m**	**0.7**	**—**
Power Cord Length			**m**	**2.0**	**—**
Number of core-wire				**3 (1.0 mm2)**	**—**
Dimensions	**Height**		**inch (mm)**	**10 - 31/32 (279)**	**41 - 5/32 (**
	Width		**inch (mm)**	**31 - 15/32 (799)**	**30 - 23/32**
	Depth		**inch (mm)**	**7 - 27/32 (199)**	**9 - 21/32**
Net Weight			**lb (kg)**	**20 (9.0)**	**183 (8**
Compressor		**Type**		**—**	**Rotary (1 c** **rolling pist**
	Motor	**Type**		**—**	**Induction (**
	Rated	**Output**	**W**	**(1 unit) 1,100**	**(2 units) 1,**
Air Circulation		**Type**		**Cross-flow Fan**	**Propelle**
		Material		**AS + Glass Fiber 30%**	**AES + Glass**
	Motor	**Type**		**Induction (4-poles)**	**Induction (**
		Input	**W**	**28.7 - 27.1**	**65.8 × 2 - 5**
	Rated	**Output**	**W**	**(1 unit) 20, (2 units) 20 × 2**	
	Fan Speed	**Low**	**rpm**	**890 - 835**	**—**
		Medium	**rpm**	**1125 - 1075**	**—**
		High	**rpm**	**1260 - 1235**	**695 - 635, 7**
		SuperHigh	**rpm**	**1340 - 1330**	**—**
Heat Exchanger	**Description**			**Evaporator**	**Conde**
	Tube material			**Copper**	**Copp**
	Fin material			**Aluminium**	**Alumin**
	Fin Type			**Slit Fin**	**Corrugat**
	Row / Stage			**(Plate fin configuration, forced dr**	
				2 × 14	**2 × 1**
	FPI			**21**	**16**
	Size (W × H × L)		**mm**	**614 × 294 × 25.4**	**706.2 × 482** **669.**
Refrigerant Control Device				**—**	**Capillary**
Refrigeration Oil			**(c.c)**	**—**	**SUNISO 4G** **ATMOS M60**
Refrigerant (R-22)			**g (oz)**	**(1 unit) 1160 (41.0)**	**(2 units) 1160** **2)**
Thermostat				**Electronic Control**	**—**
Protection Device				**—**	**Overload P**
Capillary Tube	**Length**		**mm**	**—**	**Cooling; 810,** **550**
	Flow Rate		**l/min**	**—**	**Cooling; 7.0,** **12.5**
	Inner Diameter		**mm**	**—**	**Cooling; 1.3, H**
Air Filter	**Material** **Style**		**(c.c)**	**P.P.** **Honeycomb**	**—**
Capacity Control				**Capillary Tube**	
Compressor Capacitor			**μF, VAC**	**—**	**30 μF, 3**

Fan Motor Capacitor	**μ F, VAC**	**1.5 μ F, 400VAC**	**(Upper unit) 400VAC (Lowe μ F, 400**

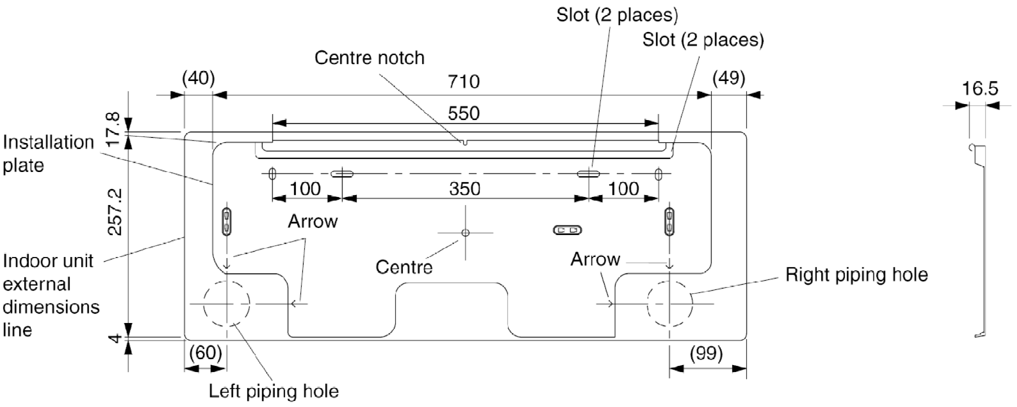
- Specifications are subject to change without notice for further improvement.

4. Dimensions

CS-MA75KE / CS-MA95KE / CS-MA125KE

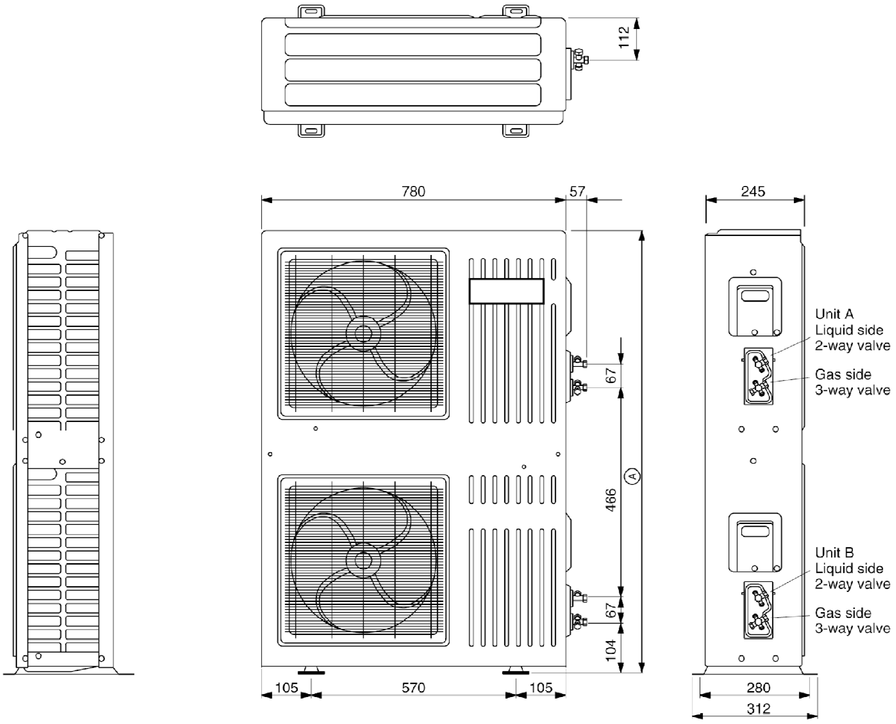

Unit : mm
<Front View>
Air intake direction
Air outlet direction
Left piping hole
<Side View>
279
799
199
60
36
Right piping hole
<Side View>
60
60
58
83
<BackView>
Gas side
Liquid side
Drain port
65
425
48
Remote control transmitter
65
18
122
TEMP
POWERFUL

Relative position between the indoor unit and the installation plate <Front View>


Slot (2 places)
Slot (2 places)
Centre notch
(40)
710
(49)
16.5
550
17.8
Installation plate
100
350
100
257.2
Arrow
Indoor unit external dimensions line
Centre
Arrow
Right piping hole
4
(60)
(99)
Left piping hole

CU-MA185KE, CU-MA195KE, CU-MA245KE

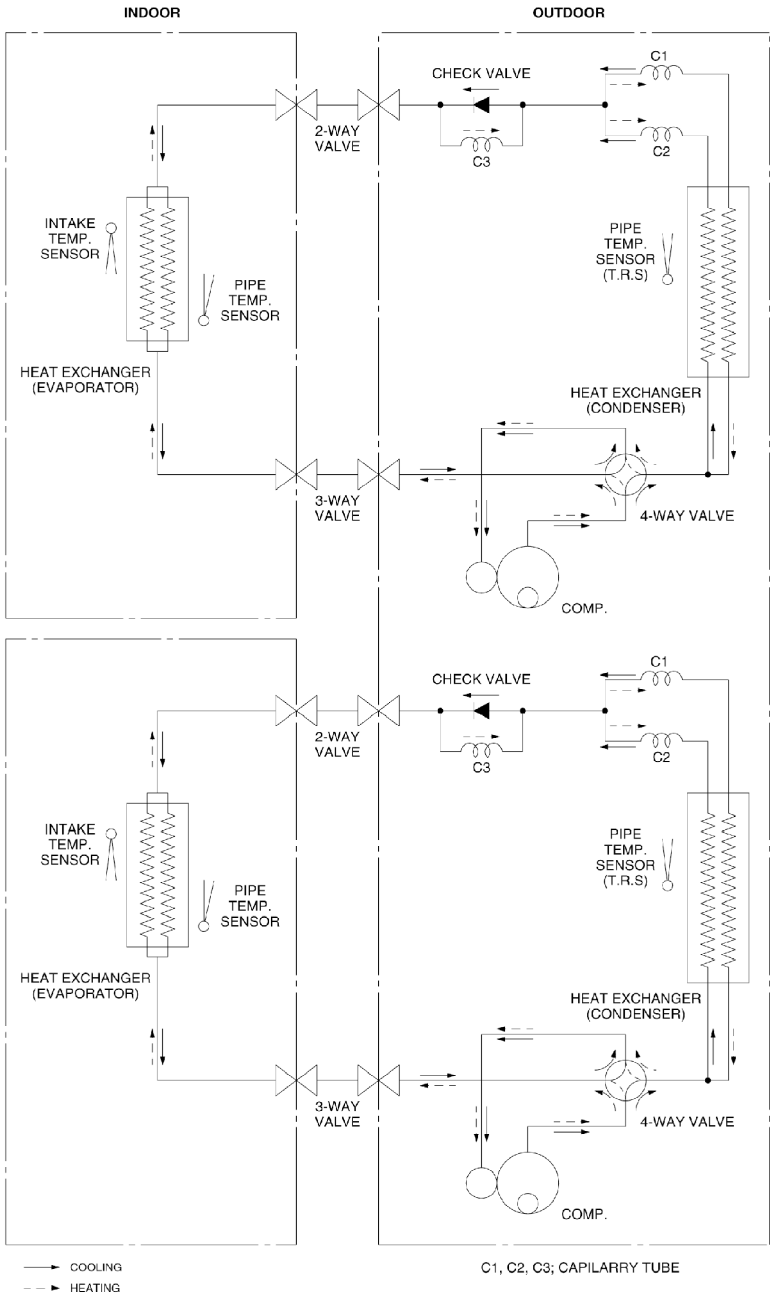
	CU-MA185K	CU-MA195K	CU-MA245K
Ⓐ	985	1015	1045



112
780
57
245
67
466
Ⓐ
67
104
105
570
105
280
312
Unit A
Liquid side
2-way valve
Gas side
3-way valve
Unit B
Liquid side
2-way valve
Gas side
3-way valve

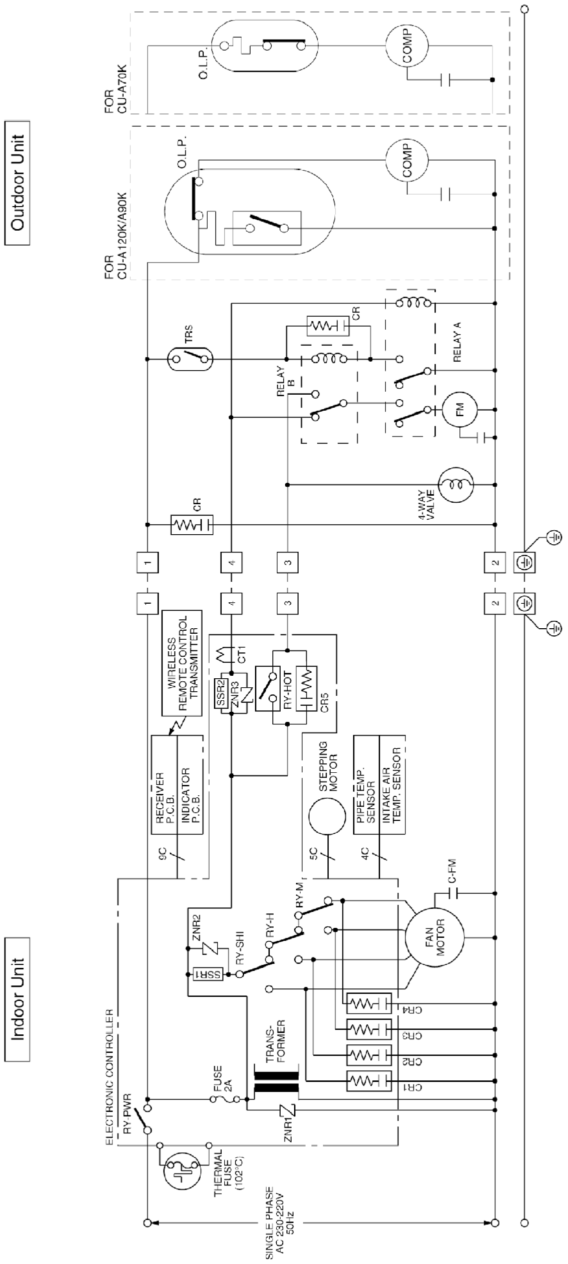
5. Refrigeration Cycle Diagram

CS-MA95KE / CU-MA185KE
CS-MA125KE / CU-MA245KE
CS-MA75KE / CU-MA195KE
CS-MA125KE


INDOOR
OUTDOOR
CHECK VALVE
C1
C2
C3
2-WAY VALVE
INTAKE TEMP. SENSOR
PIPE TEMP. SENSOR
PIPE TEMP. SENSOR (T.R.S)
HEAT EXCHANGER (EVAPORATOR)
HEAT EXCHANGER (CONDENSER)
3-WAY VALVE
4-WAY VALVE
COMP.
CHECK VALVE
C1
C2
C3
2-WAY VALVE
INTAKE TEMP. SENSOR
PIPE TEMP. SENSOR
PIPE TEMP. SENSOR (T.R.S)
HEAT EXCHANGER (EVAPORATOR)
HEAT EXCHANGER (CONDENSER)
3-WAY VALVE
4-WAY VALVE
COMP.
COOLING
HEATING
C1, C2, C3; CAPILARRY TUBE

6. Block Diagram

CS-MA95KE / CU-MA185KE
CS-MA125KE / CU-MA245KE
CS-MA75KE
CS-MA125KE / CU-MA195KE



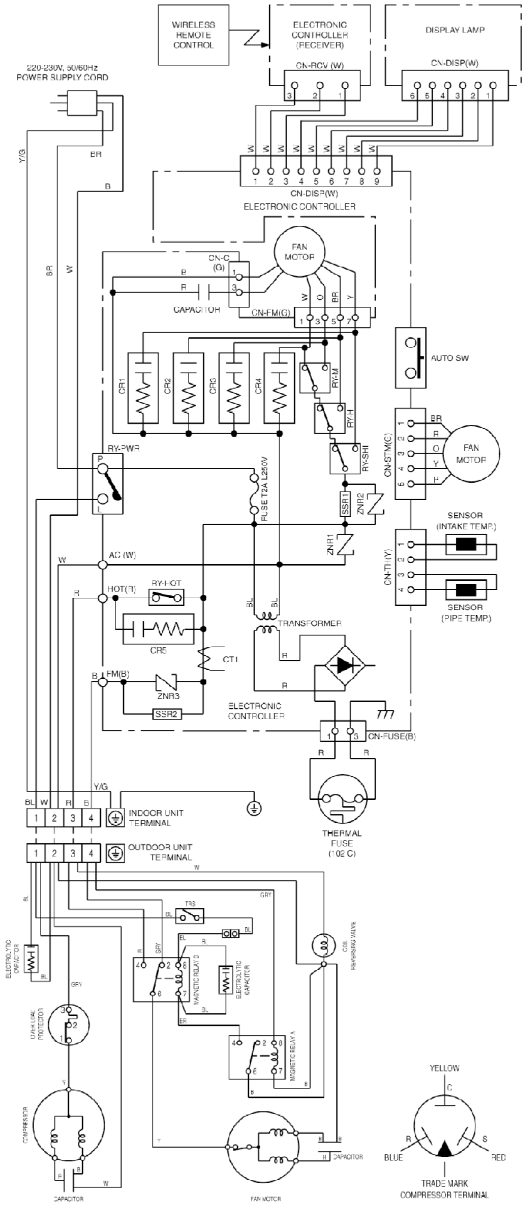
Outdoor Unit
Indoor Unit
FOR CU-A70K
FOR CU-A120K/A90K
O.L.P.
COMP
TRS
CR
RELAY R
RELAY A
FM
4-WAY VALVE
1
2
3
4
WIRELESS REMOTE CONTROL TRANSMITTER
RECEIVER P.C.B.
INDICATOR P.C.B.
9C
SSR2
ZNR3
CT1
RY-HOT
CR5
STEPPING MOTOR
5C
PIPE TEMP. SENSOR
INTAKE AIR TEMP. SENSOR
4C
C-FM
FAN MOTOR
RY-M
RY-H
RY-SHI
ZNR2
SSR1
CR1
CR2
CR3
CR4
TRANS-FORMER
FUSE 2A
ZNR1
ELECTRONIC CONTROLLER
RY-PWR
THERMAL FUSE (102°C)
SINGLE PHASE AC 230-220V 50Hz

※ ┌ ┐ Indicates the electronic control unit.

※ "C" Indicates the number of core wires. (Example:6C=6 core wires).

7. Wiring Diagram

CS-MA95KE / CU-MA185KE
CS-MA125KE / CU-MA245KE


WIRELESS REMOTE CONTROL
ELECTRONIC CONTROLLER (RECEIVER)
CN-RCV (W)
DISPLAY LAMP
CN-DISP(W)
220-230V, 50/60Hz POWER SUPPLY CORD
Y/G
BR
B
W
CN-DISP(W)
ELECTRONIC CONTROLLER
FAN MOTOR
CN-C (G)
R
CAPACITOR
CN-FM(G)
O
Y
CR1
CR2
CR3
CR4
RY-M
RY-H
RY-SHI
AUTO SW
CN-STM(C)
FAN MOTOR
RY-PWR
FUSE T2A L250V
SSR1
ZNR2
ZNR1
SENSOR (INTAKE TEMP.)
CN-TH(Y)
SENSOR (PIPE TEMP.)
AC (W)
HOT(R)
RY-HOT
CR5
CT1
TRANSFORMER
BL
FM(B)
ZNR3
SSR2
ELECTRONIC CONTROLLER
CN-FUSE(B)
THERMAL FUSE (102 C)
INDOOR UNIT TERMINAL
OUTDOOR UNIT TERMINAL
GRY
TRS
ELECTROLYTIC CAPACITOR
MAGNETIC RELAY D
MAGNETIC RELAY A
COIL REVERSING VALVE
OVER LOAD PROTECTOR
COMPRESSOR
CAPACITOR
FAN MOTOR
YELLOW
C
S
BLUE
RED
TRADE MARK COMPRESSOR TERMINAL

REMARKS

B : BLUE
BR : BROWN
BL : BLACK
W : WHITE
R : RED
O : ORANGE
P : PINK
Y/G : YELLOW/GREEN

Resistance of Indoor Fan Motor Windings

MODEL	CS-MA95KE	CS-MA125KE
CONNECTION	CWA921032	CWA921031
YELLOW-BLUE	451.2 Ω	450.7 Ω
YELLOW-BROWN	86.7 Ω	68.2 Ω
BROWN-ORANGE	98.4 Ω	56.7 Ω
ORANGE-WHITE	51.5 Ω	56.9 Ω
WHITE-RED	240.8 Ω	102.0 Ω

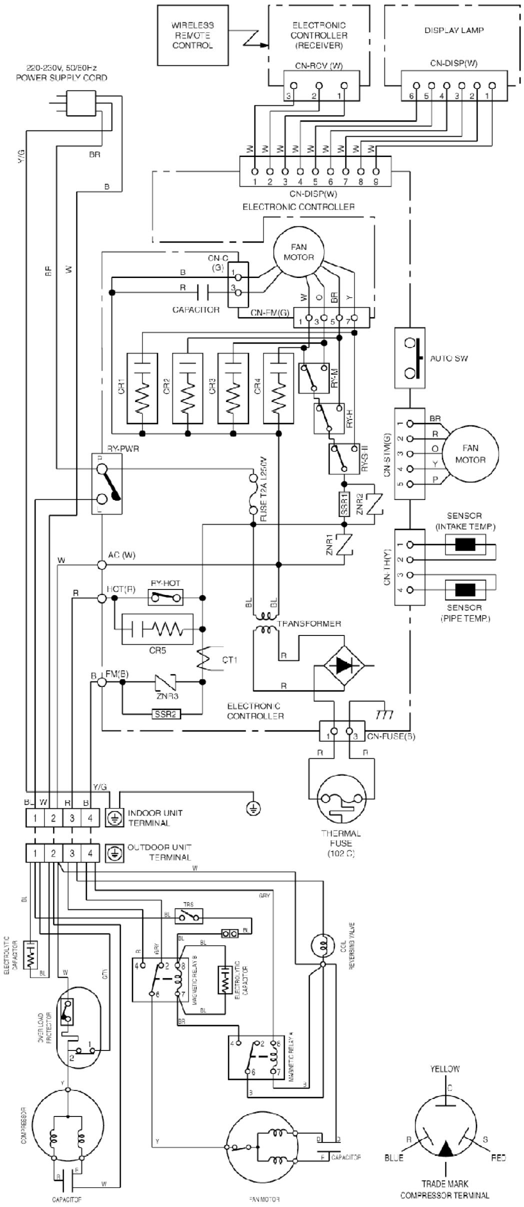
Resistance of Outdoor Fan Motor Windings

MODEL	CU-MA185KE	CU-MA245KE
CONNECTION	CWA95245	CWA95245
BLUE-YELLOW	260.5 Ω	260.5 Ω
YELLOW-RED	446.0 Ω	446.0 Ω

Resistance of Compressor Windings

MODEL	CS-MA95KE/ CU-MA185KE	CS-MA125KE/ CU-MA245KE
CONNECTION	2PS164D3AD02	2KS224D5AC02
C-R	3.429 Ω	2.454 Ω
C-S	4.763 Ω	3.856 Ω

CS-MA75KE / CU-MA195KE
CS-MA125KE


WIRELESS REMOTE CONTROL
ELECTRONIC CONTROLLER (RECEIVER)
DISPLAY LAMP
CN-RCV (W)
CN-DISP(W)
220-250V, 50/60Hz POWER SUPPLY CORD
CN-DISP(W)
ELECTRONIC CONTROLLER
FAN MOTOR
CN-C (3)
CAPACITOR
CN-FM(G)
CR1
CR2
CR3
CR4
RY-M
RY-H
RY-S II
AUTO SW
CN-STM(G)
FAN MOTOR
RY-PWR
FUSE T2A L250V
SSR1
ZNR2
ZNR1
SENSOR (INTAKE TEMP.)
CN-TH(Y)
SENSOR (PIPE TEMP.)
AC (W)
HOT(R)
RY-HOT
CR5
CT1
TRANSFORMER
FM(B)
ZNR3
SSR2
ELECTRONIC CONTROLLER
CN-FUSE(B)
THERMAL FUSE (102 C)
INDOOR UNIT TERMINAL
OUTDOOR UNIT TERMINAL
ELECTROLYTIC CAPACITOR
OVERLOAD PROTECTOR
COMPRESSOR
CAPACITOR
TRS
MAGNETIC RELAY B
ELECTROLYTIC CAPACITOR
COIL REVERSING VALVE
MAGNETIC RELAY A
FAN MOTOR
CAPACITOR
YELLOW
BLUE
RED
TRADE MARK COMPRESSOR TERMINAL

REMARKS

B : BLUE
BR : BROWN
BL : BLACK
W : WHITE
R : RED
O : ORANGE
P : PINK
Y/G : YELLOW/GREEN

Resistance of Indoor Fan Motor Windings

MODEL	CS-MA75KE	CS-MA125KE
CONNECTION	CWA921033	CWA921031
YELLOW-BLUE	707.1 Ω	450.7 Ω
YELLOW-BROWN	71.1 Ω	68.2 Ω
BROWN-ORANGE	64.7 Ω	56.7 Ω
ORANGE-WHITE	15.7 Ω	56.9 Ω
WHITE-RED	116.2 Ω	102.0 Ω

Resistance of Outdoor Fan Motor Windings

MODEL	CU-MA195KE
CONNECTION	CWA95245
BLUE-YELLOW	260.5 Ω
YELLOW-RED	446.0 Ω

Resistance of Compressor Windings

MODEL	CS-MA75KE/ CU-MA195KE	CS-MA125KE/ CU-MA195KE
CONNECTION	2RS122D5AB02	2KS224D5AC02
C-R	5.627 Ω	2.454 Ω
C-S	12.190 Ω	3.856 Ω

8. Operation Details

8.1. Cooling Mode Operation

Cooling in operation according to Remote Control setting.

Time Delay Safety Control (3 minutes)

- When the compressor is stopped by Remote Control, it restarts after 3 minutes when it is turned ON by Remote Control.
- When the setting temperature is reached during cooling operation, the compressor stops and it will not start for 3 minutes.

7 minutes Time Save Control

- The compressor will start automatically if it has stopped for 7 minutes even if the room temperature is between the compressor ON temperature and OFF temperature.

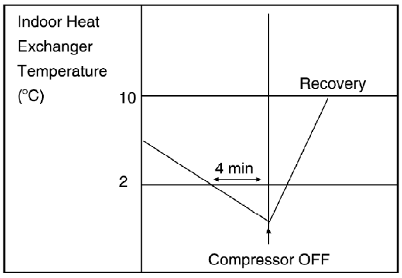
Starting Current Control

- When the compressor, outdoor fan motor & indoor fan motor are simultaneously started, the indoor fan motor will operate 1.6 second later.

Anti-Freezing Control

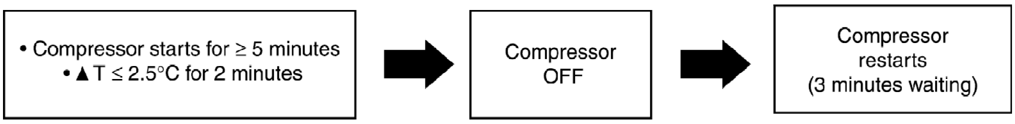
- If the temperature of the indoor heat exchanger falls continuously below 2°C for 4 minutes or more, the compressor turns off to protect the indoor heat exchanger from freezing. The fan speed setting remains the same.
- Compressor will restart again when the indoor heat exchanger temperature rises to 10°C (Recovery).

※ 3 minutes waiting of Time Delay Safety Control is valid for Cooling Operation.



Compressor Reverse Rotation Protection Control

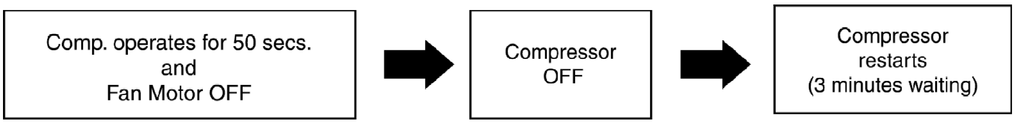
- If the compressor is operating continuously for 5 minutes or longer and the temperature difference between intake air and indoor heat exchanger is 2.5°C or less for 2 minutes, compressor will stop and restart automatically. / (Time Delay Safety Control is valid)


• Compressor starts for ≥ 5 minutes
• ▲T ≤ 2.5°C for 2 minutes
Compressor OFF
Compressor restarts (3 minutes waiting)

▲ T = Intake air temperature - Indoor heat exchanger temperature / This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

Compressor Protection Control

- After the compressor starts for 50 seconds but the outdoor fan motor is still OFF, the compressor will stop and restart automatically. (Time Delay Safety Control is valid).


Comp. operates for 50 secs. and Fan Motor OFF
Compressor OFF
Compressor restarts (3 minutes waiting)

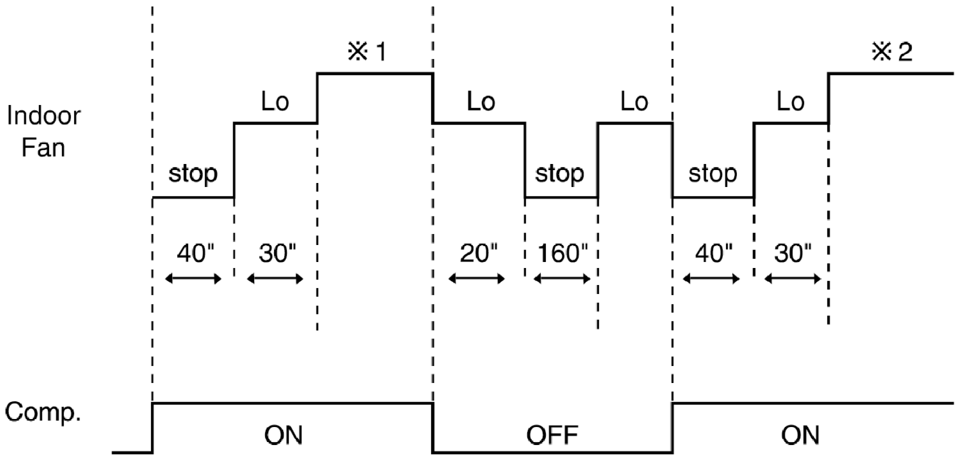
- If the above phenomenon is repeated for 3 times, the compressor will stops.
- The above phenomenon is reset when there is a change to heating mode or stopped by Remote Control Switch.

Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during cooling operation.

- Fan speed rotates in the range of Hi to Me.

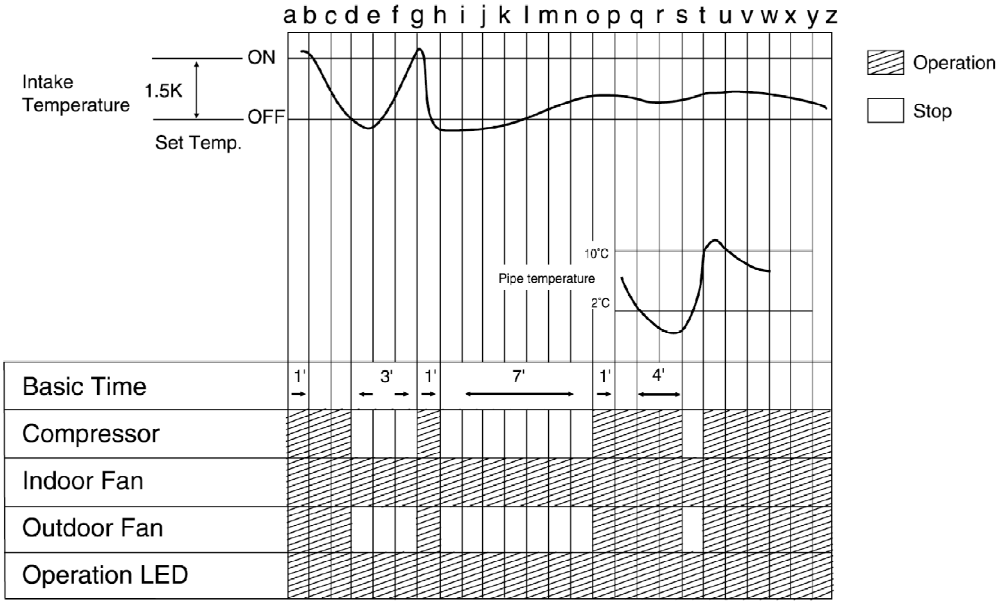
- Deodorizing Control.


Indoor Fan
※1
※2
Lo
Lo
Lo
Lo
stop
stop
stop
40"
30"
20"
160"
40"
30"
Comp.
ON
OFF
ON

※1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).

※2 Fan Speed is Me after the compressor restarts.

Cooling Operation Time Diagram


a b c d e f g h i j k l m n o p q r s t u v w x y z
Intake Temperature
1.5K
ON
OFF
Set Temp.
Operation
Stop
10°C
Pipe temperature
2°C
Basic Time
1'
3'
1'
7'
1'
4'
Compressor
Indoor Fan
Outdoor Fan
Operation LED

<Description of operation>

d – g : Time Delay Safety Control (waiting for 3 minutes)
g – h : 60 sec. Forced Operation
h – o : 7 min. Time Saved Control
q – t : Anti Freezing Control

8.2. Soft Dry Mode Operation

- **The unit starts cooling operation until the room temperature reaches the setting temperature set on the Remote Control, and then Soft Dry operation will start.**
- **During Soft Dry operation, the Indoor Fan will operate at low speed.**
- **The operation will be switched on and off for up to 10 minutes “ON” and 6 minutes “OFF”. Once Soft Dry operation is turned off, it stops for 6 minutes.**

Time Delay Safety Control

- **Once the compressor stops, it will not start for 3 minutes during Cooling operation.**

Starting Current Control

- **Same as Starting Current Control for Cooling Mode operation.**

Anti-Freezing Control

- Same as Anti-Freezing Control for Cooling Mode operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.) /

Compressor Reverse Rotation Protection Control

- Same as Compressor Reverse Rotation Protection Control for Cooling Mode Operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)

Compressor Protection Control

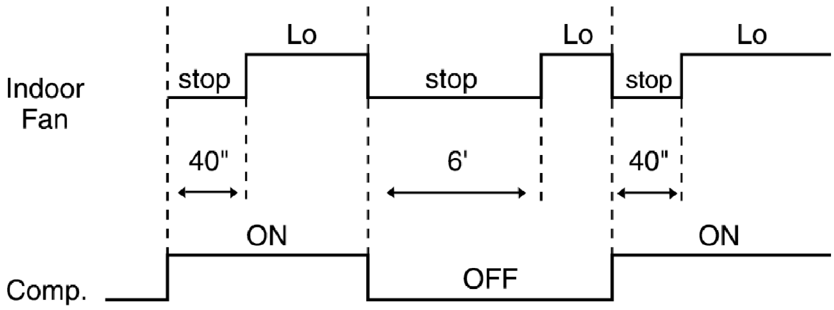
- Same as Compressor Protection Control for Cooling Mode Operation.

Automatic Fan Speed Mode

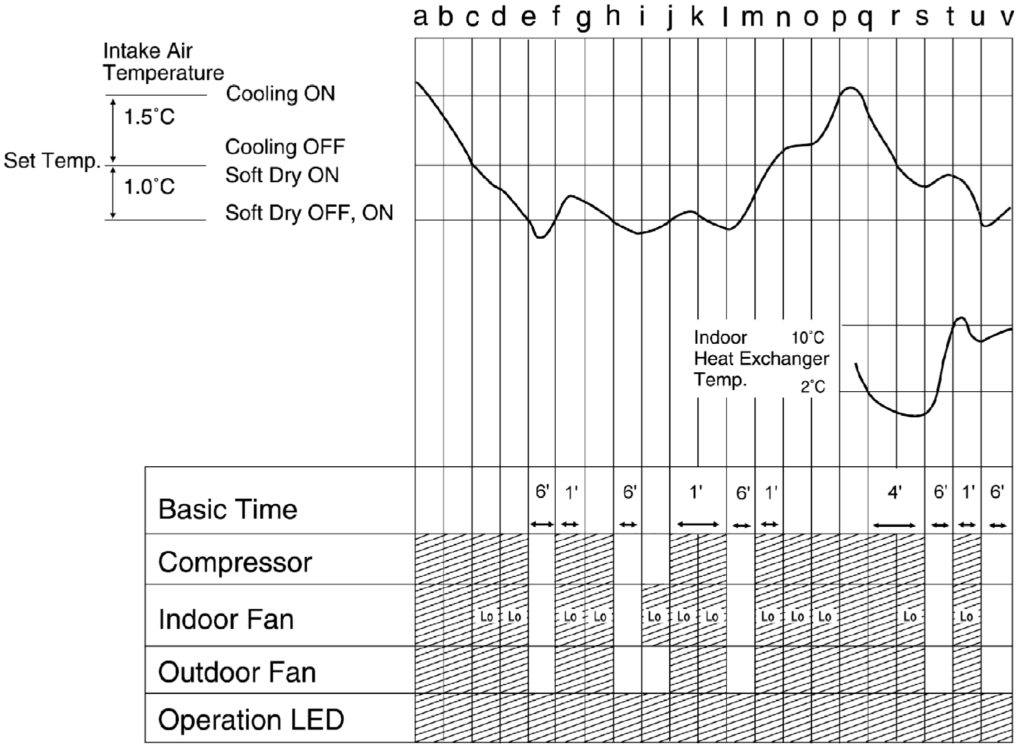
When Automatic Fan Speed is selected at Remote Control during Soft Dry operation.

- Fan speed off and on at Lo speed.

- Deodorizing Control.


Indoor Fan
Comp.
stop
Lo
stop
Lo
stop
Lo
40"
6'
40"
ON
OFF
ON

Soft Dry Operation Time Diagram


a b c d e f g h i j k l m n o p q r s t u v
Intake Air Temperature
Cooling ON
1.5˚C
Set Temp.
Cooling OFF
Soft Dry ON
1.0˚C
Soft Dry OFF, ON
Indoor Heat Exchanger Temp.
10˚C
2˚C
Basic Time
6'
1'
6'
1'
6'
1'
4'
6'
1'
6'
Compressor
Indoor Fan
Lo
Outdoor Fan
Operation LED

<Description of operation>

a – c, p – r : Cooling Operation

c – p, r – v : Soft Dry Operation

e – f : Soft Dry OFF

j – l : 60 sec. Forced Operation

q – t : Anti Freezing Control

▨ Operation

☐ Stop

8.3. Heating Mode Operation

Heating in operation according to Remote Control setting.

Time Delay Safety Control

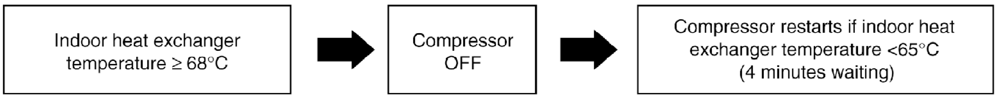
- When the compressor is stopped by Remote Control, it restarts after 3 minutes when the Remote Control is turned ON.
- When the setting temperature is reached during heating operation, the compressor stops and it will not start for 4 minutes. /

30 minutes Time Save Control

- The compressor will start automatically if it has stopped for 30 minutes even if the room temperature is between the compressor ON temperature and OFF temperature.

Overload Protection Control

- If the temperature of the indoor heat exchanger rises to 51°C, Outdoor Fan stops.
  The Outdoor Fan restarts when the indoor heat exchanger temperature falls to 49°C.
- If the indoor heat exchanger becomes 65°C or more, the compressor will stop and restart automatically.
  (Time Delay Safety Control - 4 minutes waiting).


Indoor heat exchanger temperature ≥ 68°C
Compressor OFF
Compressor restarts if indoor heat exchanger temperature <65°C (4 minutes waiting)

Compressor Reverse Rotation Protection Control

- If the compressor is operating continuously for 5 minutes or longer and temperature difference between intake air and indoor heat exchanger is 5°C or less for 2 minutes, compressor will stop and restart automatically.

(Time Delay Safety Control is valid).

▲ T = Indoor heat exchanger temperature - intake air temperature. / This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

4-way Valve Control

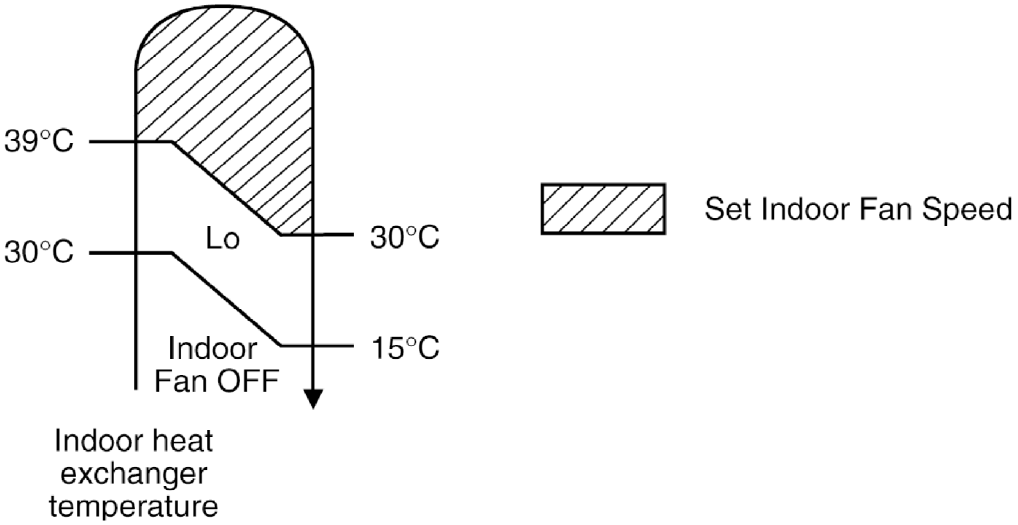
- **4-way valve always ON during Heating operation. (Except Deicing operation)**
- **When the unit is switched to “OFF” during Heating operation, 4-way valve stay at Heating position for 5 minutes.**

Outdoor Fan Motor Control

- **When compressor stops (reaches room temperature), outdoor fan will operate for 30 seconds.
  (30 seconds Forced Operation).**

Hot Start Control

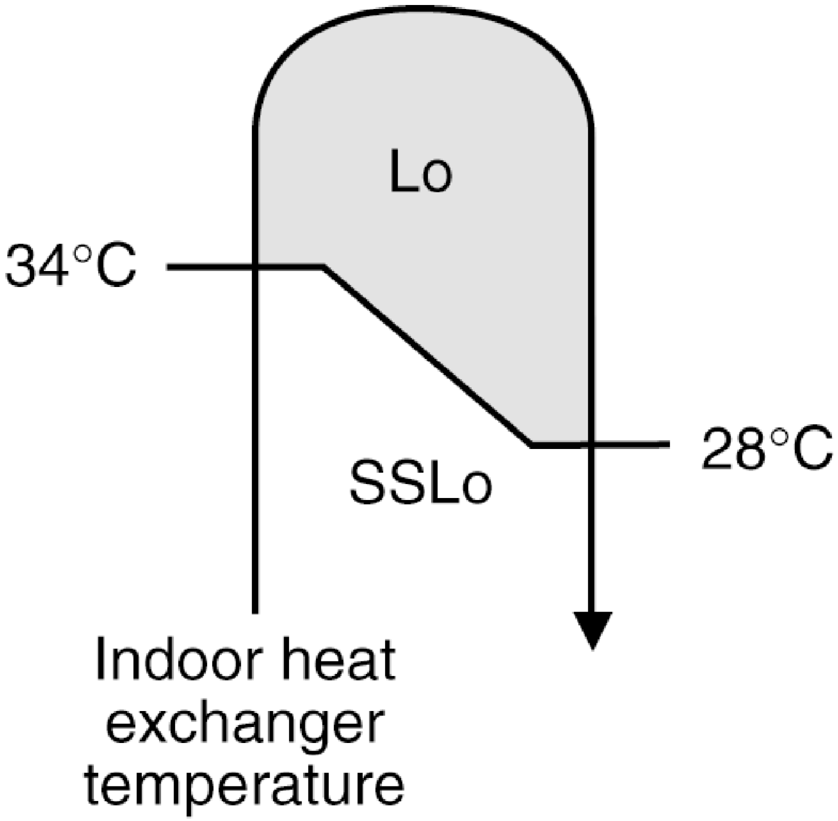
When Heating operation starts, Indoor Fan will not start until the indoor heat exchanger reaches 30°C as diagram shown.


39°C
30°C
Lo
30°C
Set Indoor Fan Speed
Indoor Fan OFF
15°C
Indoor heat exchanger temperature

Hot Start is completed when indoor heat exchanger rises to 39°C.

Anti Cold Draft Control

- **This operation is to prevent the Cold Draft during Heating mode operation.**
- **The operation will start when compressor OFF (Thermo OFF) during Heating operation.**
- **For the first 30 sec from compressor OFF (Thermo OFF), Indoor fan speed will operate accordingly to the Indoor heat exchanger temperature as shown below:**



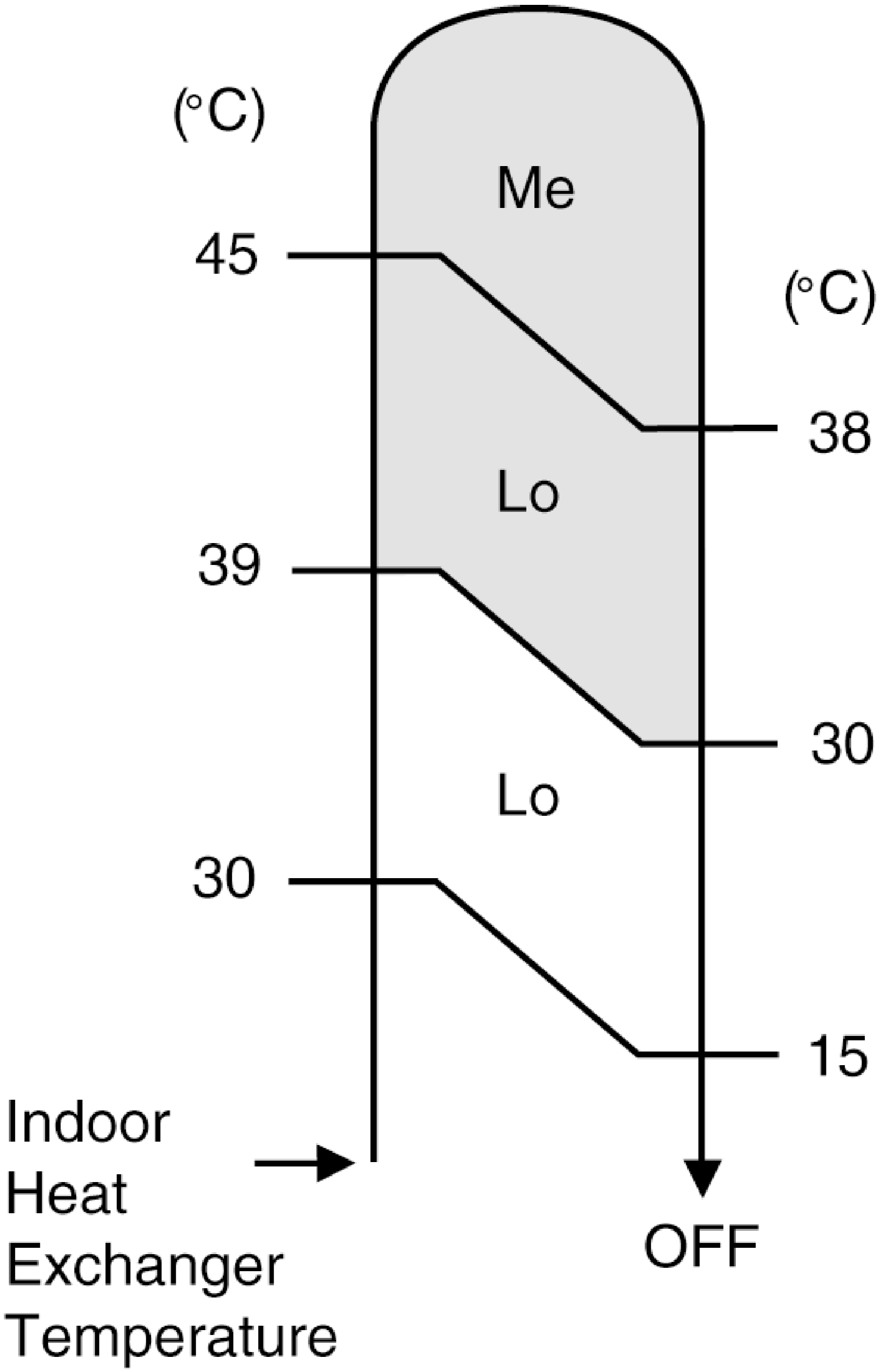
Note: SSLo: Fan will be running at Lo speed with Indoor heat exchanger temperature 1.5 sec ON and 5.5 sec OFF.

- **After 30 sec. from compressor OFF (thermo OFF), Indoor fan will run at SSLo speed only.**
- **Anti Cold Draft Control will stop when:**
- **Intake temperature < set temperature -1.5°C. (Time Delay Safety Control 4 minutes waiting is valid)**
- **After 30 minutes time saved control. (see page 22).**

Automatic Fan Speed Mode

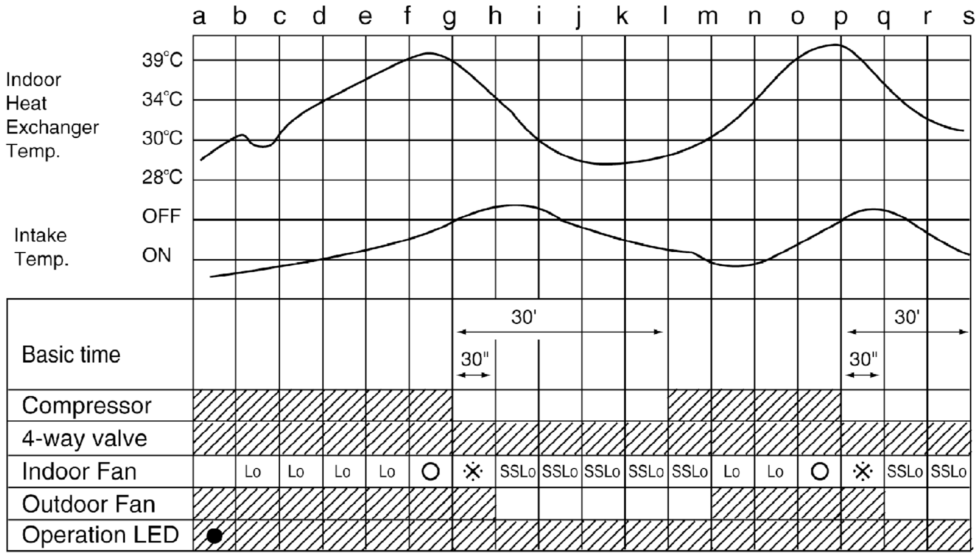
When Automatic Fan Speed is selected at Remote Control during heating operation.

- **Fan speed rotates in the range of Me → Lo according to the heat exchanger temperature.**


(°C)
Me
45
(°C)
38
Lo
39
30
Lo
30
15
Indoor Heat Exchanger Temperature
OFF

- If use Manual Fan Speed, ▨ at above diagram will operate with setting Fan Speed.

Heating Operating Time Diagram


a b c d e f g h i j k l m n o p q r s
Indoor Heat Exchanger Temp.
39°C
34°C
30°C
28°C
Intake Temp.
OFF
ON
Basic time
30'
30"
30'
30"
Compressor
4-way valve
Indoor Fan
Lo Lo Lo Lo ○ ※ SSLo SSLo SSLo SSLo SSLo Lo Lo ○ ※ SSLo SSLo
Outdoor Fan
Operation LED
●

<Description of operation>

a – b : Hot start (Indoor fan = OFF)

b – d : Hot start (Indoor fan = Lo)

g – m : Indoor fan control (anti cold draft control during thermostat OFF)

g – h : Outdoor fan control (30 sec. Forced Operation) after compressor stops.

○ : Set Indoor Fan Speed

● : Blinking

※ : Fan Speed will follow indoor heat exchanger temperature

Deicing Control

Deice starts to prevent frosting at outdoor heat exchanger.

- Normal Deicing

Deice operations detection commences after 30 minutes of Heating operation starts or 60 minutes after previous deice operation. If the TRS (Thermal Reed Switch) senses the outdoor piping temperature drops to -3°C (TRS CLOSE) or less for 50 sec. continuously during compressor is in operation, deice will start. (There is no detection during Outdoor Fan stops.)

- Overload Deicing

During heating operation, if the outdoor Fan OFF duration (due to overload control) is accumulated up to 60 minutes and after compressor starts for 1 minutes, deicing starts.

- Deicing ends when

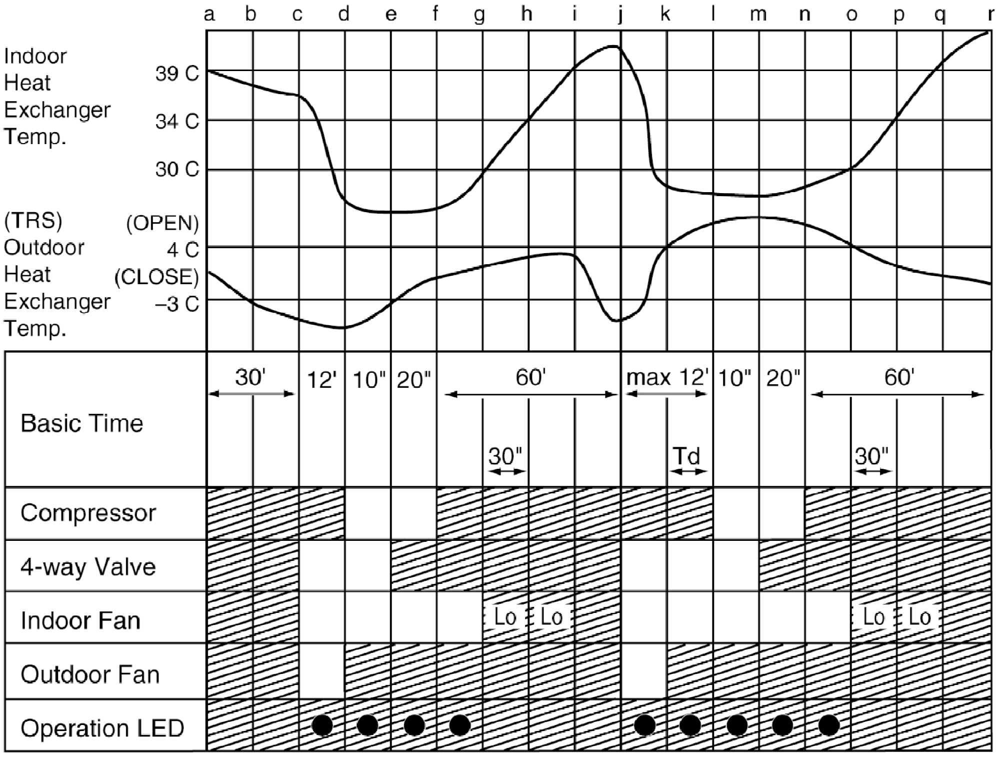
1. 12 minutes after deicing operation starts;

2. **TRS senses the outdoor piping temperature rises to 4°C (TRS OPEN).**
3. **Deicing will not end immediately as time delay (Td) is valid as shown below.**

Time taken from deicing starts to TRS OPEN (T)	Td (seconds)
T < 3 minutes	0
3 minutes≦T < 6 minutes	60
6 minutes≦T < 9 minutes	120
T≧9 minutes	180

- Once deicing operation starts, it will not end for 60 seconds.
- After deicing operation, compressor stops for 30 seconds and 4-way valve stays at cooling position for 10 seconds.

Normal Deicing Time Diagram

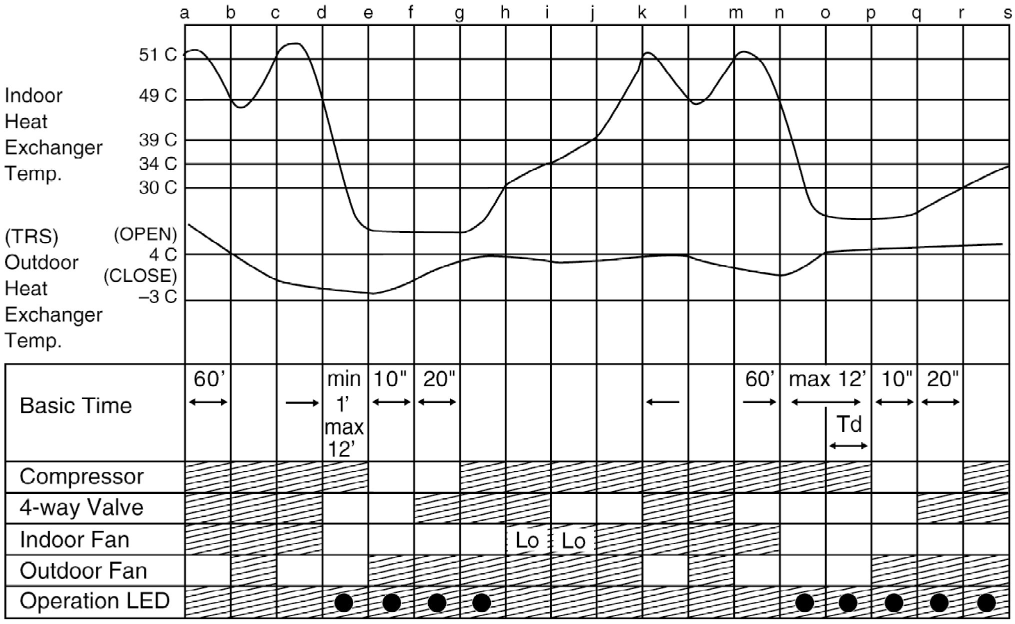

a b c d e f g h i j k l m n o p q r
Indoor Heat Exchanger Temp.
39 C
34 C
30 C
(TRS) Outdoor Heat Exchanger Temp.
(OPEN)
4 C
(CLOSE)
−3 C
Basic Time
30'
12'
10"
20"
60'
30"
max 12'
Td
10"
20"
60'
30"
Compressor
4-way Valve
Indoor Fan
Lo
Lo
Lo
Lo
Outdoor Fan
Operation LED

<Description of operation>

a – c : Deicing operation judging condition established
c – d : Deicing operation (timer detected)
d – e, l – m : Time delay for 4-way valve
e – f, m – n : Hot start (no thermo OFF)
g – h, o – p : Not thermo OFF (after finished hot start)
j – l : Deicing operation (TRS detected)

● : Blinking
▨ Operation
☐ Stop

Overload Deicing Time Diagram


a b c d e f g h i j k l m n o p q r s
Indoor Heat Exchanger Temp.
51 C
49 C
39 C
34 C
30 C
(TRS) Outdoor Heat Exchanger Temp.
(OPEN)
4 C
(CLOSE)
–3 C
Basic Time
60'
min 1' max 12'
10"
20"
60'
max 12'
Td
10"
20"
Compressor
4-way Valve
Indoor Fan
Lo
Lo
Outdoor Fan
Operation LED

<Description of operation>

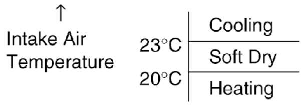
a – d, k – h : Overload Control
d – g : Overload Deicing (timer detected)
g – h : Hot start (indoor fan OFF)
h – i : Hot start (indoor fan Lo)
n – p : Overload Control (TRS detected)

● : Blinking
▨ Operation
☐ Stop

8.4. Automatic Mode Operation

1. When the Automatic Mode Operation is selected, the indoor fan operates at Lo fan speed for 25 seconds to sense intake air temperature and determine the 1st operation mode.

Standard for Determining Operation Mode
1st Judgement


↑
Intake Air Temperature
23°C
20°C
Cooling
Soft Dry
Heating

※ Automatic Set Temperature
Refer 3. as below.

2. Operation mode will be determine again after 1 hour of operation, if the room temperature reaches to set temperature and compressor off time is over 7 minutes 30 seconds continuously.

※ **The present operation mode will be continued, if the room temperature does not reach to set temperature (Compressor keeps running) eventhough after 1 hour from automatic operation m started.**

Standard for Determining Operation Mode
2nd Judgement onwards

Present Mode	Judgement	Next Mode Cooling	Next Mode Soft Dry	Next Mode Heating
Cooling	23°C Cooling Heating	O (Judgement: 23°C & Above)	Not Applicable	O (Judgement Below 23°C
Soft Dry	20°C Soft Dry Heating	Not Applicable	O (Judgement: 20°C & Above)	O (Judgement Below 20°C
Heating	Cooling 25°C Heating	O (Judgement: Above 25°C)	Not Applicable	O (Judgement 25°C & belo

※ Automatic Set Temperature
Refer 3. as below.

3. Automatic Set Temperature

For each operation, set temperature will automatically set as shown below.

However it can be selected 2°C higher or 2°C lower from standard set temperature by pressing the “Room Temperature Setting button”.

Operation Mode	▲Hi AUTO	AUTO	AUTO Hi ▼Lo
	(+2°C)	(±0°C)	(-2°C)
Cooling	27°C	25°C	23°C
Soft Dry	24°C	22°C	20°C
Heating	23°C	21°C	19°C

8.5. Sleep Mode Auto Operation

Cooling or Soft Dry Operation

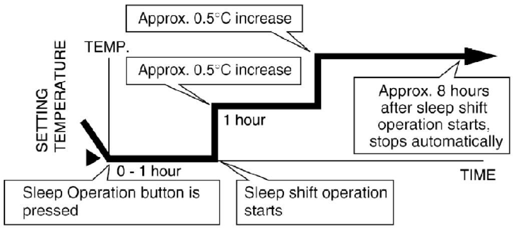
When you press the SLEEP Mode, the following movement will start to avoid overcooling.

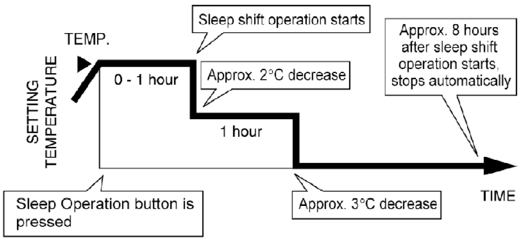
- **The fan speed refer to Indoor Fan Motor Control.**
- **The setting temperature will be risen by 0.5°C at the start of operation and by 0.5°C one hour later.**
- **The operation will stop after 8 hours.**
- **When using together with the Timer, the ON-Timer has priority.**

Heating Operation

When you press the SLEEP Mode, the following movement will start to avoid overheating.

- **The fan speed refer to Indoor Fan Motor Control.**
- **The setting temperature will be decrease by 2°C at the start of operation and by 3°C one hour later.**
- **The operation will stop after 8 hours.**
- **When using together with the Timer, the ON-Timer has priority.**


Approx. 0.5°C increase
TEMP.
SETTING TEMPERATURE
Approx. 0.5°C increase
1 hour
Approx. 8 hours after sleep shift operation starts, stops automatically
0 - 1 hour
TIME
Sleep Operation button is pressed
Sleep shift operation starts


Sleep shift operation starts
TEMP.
Approx. 8 hours after sleep shift operation starts, stops automatically
SETTING TEMPERATURE
0 - 1 hour
Approx. 2°C decrease
1 hour
Sleep Operation button is pressed
Approx. 3°C decrease
TIME

8.6. Random Auto Restart Control

- **If there is a power failure, operation will be automatically restarted after 3 to 51/2 minutes when the power is resumed. It will start with previous operation mode and airflow direction.**
- **Restart time is decided randomly using 4 parameter:**
  Intake air temperature, setting temperature, fan speed and Air

Swing Blade position.

- Random Auto Restart Control is not available when Timer or Sleep Mode is set.
- This control can be omitted by open the circuit of JX1. (Refer Circuit Diagram)

8.7. Delay ON Timer Control

- When the Delayed ON Timer is set by using the remote control, the unit will start operate slightly before the set time, so that the room will reach nearly to the set temperature by the desired time.
- For Cooling and Soft Dry mode, the operation will start 15 minutes before the set time.
- For Heating mode, the operation will start 30 minutes before the set time.
- For Automatic mode, the indoor fan will operate at Lo speed for 25 seconds, 30 minutes before the set time to detect the intake air temperature to determine the operation mode. The operation indication lamp will blink at this time.

8.8. Remote Control Signal Receiving Sound

- Long beep sound will be heard when:-
- Stopping the Air Conditioner using ON/OFF switch.
- Stopping the Sleep Mode.
- Stopping the Powerful Mode.
- Stopping the Economy Mode.
- Short beep sound will be heard for others.
- To switch off the beep sound:-

  Press the “Automatic Operation Button” continuously for 10 seconds or more (“beep” “beep” will be heard at the 10th second). Repeat the above if you want to switch ON the beep sound or switch OFF the power switch at the indoor unit and switch it ON again. /

※ However, if the “Automatic Operation Button” has been pressed the Automatic cooling operati
activated.
If you do not require this operation, you may change it by using the remote control.

8.9. Indoor Fan Speed Control

Auto Fan Speed Control

When set to Auto Fan Speed, the fan speed is shifted automatically between Stop to SHi depend on each operation as shown below.

Manual Fan Speed Control

Basic fan speed adjustment (3 settings, from Lo to Hi) can be carried out by using the Fan Speed selection button at the remote control.

Tap				SHi	Hi	Me	Lo	RLo
COOLING	Normal	Manual	Hi		O			
			Me			O		
			Lo				O	
		Auto Fan Speed			O	O		
		Sleep Shift					O	
	Powerful	Manual		O				
		Auto Fan Speed		O				
		Sleep Shift					O	
	Economy	Manual						O
		Auto Fan Speed						O
		Sleep Shift					O	
SOFT DRY	Normal	Manual					O	
	Powerful	Auto Fan Speed					O	
	Economy	Sleep Shift					O	
HEATING (MA75K)	Normal	Manual	Hi	O			O	
			Me		O		O	
			Lo			O	O	
		Auto Fan Speed			O	O	O	
		Sleep Shift					O	
	Powerful	Manual		O	O	O	O	
		Auto Fan Speed			O	O	O	
		Sleep Shift					O	
	Economy	Manual		O	O	O	O	
		Auto Fan Speed			O	O	O	
		Sleep Shift					O	
HEATING (MA95K & MA125K)	Normal	Manual	Hi	O			O	
			Me			O	O	
			Lo				O	
		Auto Fan Speed				O	O	
		Sleep Shift					O	
	Powerful	Manual		O		O	O	
		Auto Fan Speed				O	O	
		Sleep Shift					O	
		Manual		O		O	O	

	Economy	**Auto Fan Speed**			**O**	**O**	
		Sleep Shift				**O**	
MODE JUDGEMENT						**O**	

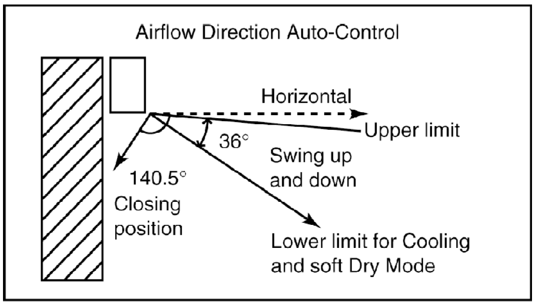
※ RLo: Random Low Speed.
Lo, RLo^{-}, RLo^{--}, Fan Speed is operates randomly.

Random Low Speed

Fan Speed	Lo	RLo^{-}				RLo^{--}			
Time	10"	4.5"	0.5"	4.5"	0.5"	4"	1"	4"	1"
Fan Motor	ON	ON	OFF	ON	OFF	ON	OFF	ON	OFF

8.10. Airflow Direction Control

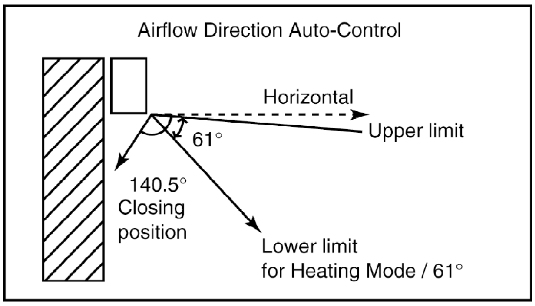
1. Vertical Airflow Direction
Cooling and Soft Dry Mode


Airflow Direction Auto-Control
Horizontal
Upper limit
36°
Swing up and down
140.5°
Closing position
Lower limit for Cooling and soft Dry Mode

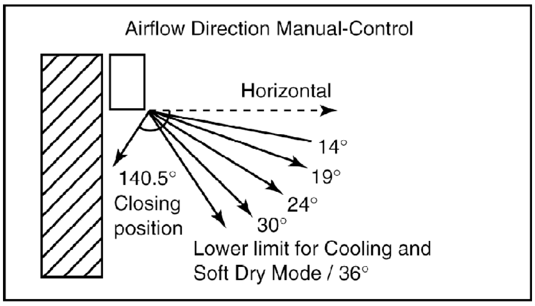
- The louver swings up and down as shown above.

- The louver does not swing when the Indoor Fan stops during operation.

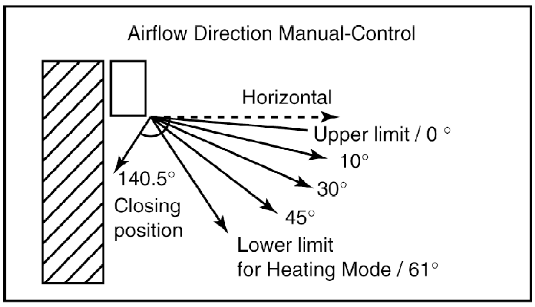
2. Vertical Airflow Direction
Heating Mode


Airflow Direction Auto-Control
Horizontal
Upper limit
61°
140.5°
Closing position
Lower limit
for Heating Mode / 61°

- When the intake air temp. reaches 38°C, the louver is changed from upper to lower limit. When the intake air temp falls to 35°C, the louver is changed from lower to upper limit.


Airflow Direction Manual-Control
Horizontal
14°
19°
24°
30°
140.5° Closing position
Lower limit for Cooling and Soft Dry Mode / 36°

- The louver can be selected between 14° - 36° (as shown above) when pressing Manual Airflow Direction Selection Button.


Airflow Direction Manual-Control
Horizontal
Upper limit / 0 °
10°
30°
45°
140.5° Closing position
Lower limit for Heating Mode / 61°

- The louver can be selected between 0° - 61° (as shown above) when pressing Manual airflow Direction Selection Button.

3. Horizontal Airflow Direction

- The left and right airflow direction louvers can be adjusted manually.

8.11. Economy Mode Operation

Purpose of this operation is to save or reduced electrical power consumption of the room air conditioner.
However consumer is advised to use Economy Mode operation after the room temperature reaches the desired temperature.

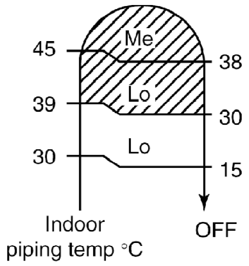
1. Cooling and Soft Dry Mode

- When the Economy Mode is set, the set temperature will be automatically increased 0.5°C against the present setting temperature. This operation automatically will be running under Random Fan speed.
- Vertical Airflow Direction:-
  In “Manual” or “Auto” setting, the vane will automatically

change to Auto Air Swing.

2. Heating Mode

- When the Economy Mode is set, the temperature will be automatically decreased 0.5°C against the present setting temperature.
- The Fan Speed will shift as shown below:



- When the Auto Fan speed is selected, the fan speed will automatically change from Lo to Me depending to the Indoor piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically change to Lo, then follows set fan speed when the Indoor piping temperature reaches 39°C.

▨ Set Fan Speed

- Vertical Airflow Direction:-
  In “Manual” or “Auto” setting, the vane will automatically change to Auto Air Swing. /

3. Economy Mode will stop if:

- Economy mode button is pressed again.
- Stopped by ON / OFF switch.
- Timer-off activates.
- Powerful mode button is pressed.
- Fan Speed control button is pressed.
- Sleep mode button is pressed ON.
- Operating mode is changed.

8.12. Powerful Mode Operation

Purpose of this operation is to be obtain the setting temperature quickly.

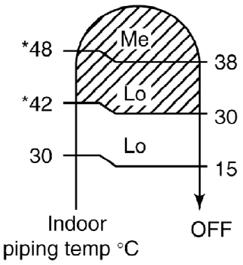
1. Cooling and Soft Dry Mode

- When the Powerful Mode is set, the set temperature will be automatically decreased 3°C against the present setting temperature. This operation automatically will be running under Super High Fan speed.
- Vertical Airflow Direction:-

In “Manual” setting, the vane will automatically shift down 10°C lower than previous setting.
In “Auto” setting, the vane will automatically swing up and down. However the upper and down. However the upper and lower limit will be shifted 10° downward.

2. Heating Mode

- When the Powerful Mode is set, the set temperature will be automatically increased 3°C against the present setting temperature.
- The Fan Speed will shift as shown below:



- When the Auto Fan speed is selected, the fan speed will automatically change from Lo to Me depending to the Indoor piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically set to Lo, then follows set fan speed when the Indoor piping temperature reaches 42°C.

▨ Set Fan Speed

- * Shows different temperature than normal heating. This higher temperature is to provide warmer air.

- Vertical Airflow Direction:-

In “Manual” setting, the vane will automatically shift down 5°C lower than previous setting.
In “Auto” setting, the vane will automatically shift between upper and lower limit depending on the intake air temperature as Heating Mode, Airflow Direction Auto-Control. However the upper and lower limit will be shifted 5°C downward.

3. Powerful mode will operate for 15 minutes only.

4. Powerful Mode will stop if:

- Power mode button is pressed again.
- Stopped by ON / OFF switch.
- Timer-off activates.
- Economy mode button is pressed.
- Sleep mode button is pressed.
- Operating mode is changed.

9. Operating Instructions

10. Installation Instructions

Required tools for Installation Works			
1. Phillips screw driver	5. Spanner	9. Gas leak detector	13.Multimeter
2. Level gauge	6. Pipe cutter	10.Measuring tape	14.Torque wrench 18 N.m (1.8 kgf.m) 42 N.m (4.2 kgf.m) 55 N.m (5.5 kgf.m)
3. Electric drill, hole core drill (ø70 mm)	7. Reamer	11.Thermometer	15.Vacuum pump
4. Hexagonal wrench (4 mm)	8. Knife	12.Megameter	16.Gauge manifold

10.1. Safety Precautions

- Read this following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by all licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below.
  Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indication.

⚠ **WARNING**	This indication shows the possibility of causing death or serious injury.

⚠ **CAUTION**	This indication shows the possibility of causing injury or damage to prop

The items to be followed are classified by the symbols:

⊘	Symbol with background white denotes item that is PROHBITED from pip

- Carry out test running to confirm that no abnormality occurs after

the installation. Then, explain to user the operation, care and maintenance as stated in instruction. Please remind the customer to keep the operating instructions for future reference.

⚠ WARNING

1. **Engage dealer or specialist for installation. If installation done by the user is defective, it will c water leakage, electrical shock or fire.**
2. **Install according to this installation instruction strictly. If installation is defective, it will cause leakage, electrical shock or fire.**
3. **Use the attached accessories parts and specified parts for installation. Otherwise, it will cause to fall, water leakage, fire or electrical shock.**
4. **Install at a strong and firm location which is able to withstand the set's weight. If the strength i enough or installation is not properly done, the set will drop and cause injury.**
5. **For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity enough or defect found in electrical work, it will cause electrical shock or fire.**
6. **Use the specified cable (1.5 mm2) and connect tightly for indoor/outdoor connection. Connect and clamp the cable so that no external force will be acted on the terminal. If connection or fixi not perfect, it will cause heat-up or fire at the connection.**
7. **Wire routing must be properly arranged so that control board cover is fixed properly. If control cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electric**
8. **When carrying out piping connection, take care not to let air or other substances other than th specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnorm pressure in the refrigerant cycle, explosion and injury.**
9. **Do not damage or use unspecified power supply cord. Otherwise, it will cause fire or electrical shock.**
10. **Do not modify the length of the power supply cord or use of the extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock.**

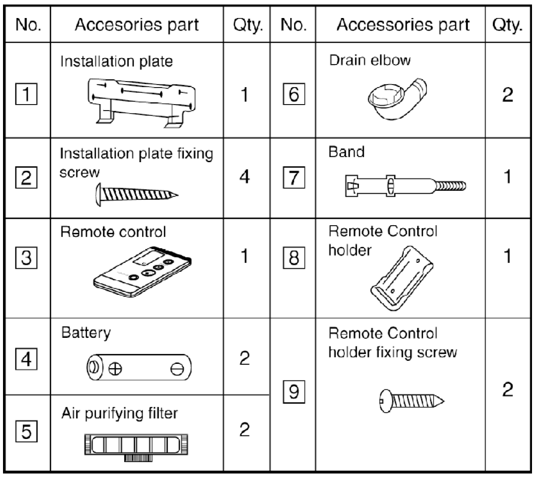
CAUTION

1. **Grounding is necessary. It may cause electrical shock if grounding is not perfect.**
2. **Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.**
3. **Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, v may enter the room and damage the furniture.**

ATTENTION

1. **Selection of the installation location.**
   Select a installation location which is rigid and strong enough to support or hold the unit, and location for easy maintenance.
2. **Power supply connection to the room air conditioner.**
   Connect the power supply cord of the room air conditioner to the mains using one of the follo method.
   Power supply point shall be the place where there is ease for access for the power disconnect case of emergency. In some countries, permanent connection of this room air conditioner to t supply is prohibited.
   1. **Power supply connection to the receptacle using a power plug. Use an approved 16A power plug with earth pin for the connection receptacle.**
   2. **Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanen It must be a double pole switch with a minimum 3 mm contact gap.**
3. **Do not release refrigerant.**
   Do not release refrigerant during piping work for installation, re-installation and during repairi refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4. **Installation work.**
   It may need two people to carry out the installation work.
5. **Do not install this appliance in a laundry room or other location where water may drip from the etc.**

Attached accessories



No.	Accesories part	Qty.	No.	Accessories part	Qty.
1	Installation plate	1	6	Drain elbow	2
2	Installation plate fixing screw	4	7	Band	1
3	Remote control	1	8	Remote Control holder	1
4	Battery	2	9	Remote Control holder fixing screw	2
5	Air purifying filter	2			

Applicable piping kit
CZ-4F5, 7, 10AN

SELECT THE BEST LOCATION

INDOOR UNIT

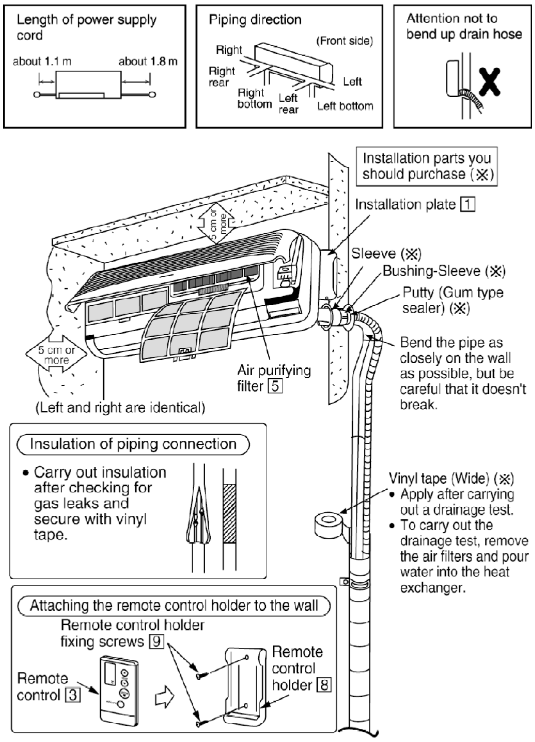
- **There should not be any heat source or steam near the unit.**
- **There should not be any obstacles blocking the air circulation.**
- **A place where air circulation in the room is good.**
- **A place where drainage can be easily done.**
- **A place where noise prevention is taken into consideration.**
- **Do not install the unit near the door way.**
- **Ensure the spaces indicated by arrows from the wall, ceiling, or other obstacles.**
- **Indoor unit of this room air conditioner shall be installed on the wall in a height of at least 2.3 m.**

OUTDOOR UNIT

- **If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.**
- **There should not be any animal or plant which could be affected by hot air discharged.**
- **Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.**
- **Do not place any obstacles which may cause a short circuit of the discharged air.**
- **If piping length is over the common length, additional refrigerant should be added as shown in the table.**

Model	Piping size		Common Length (m)	Max. Elevation (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)
	Gas	Liquid				
MA75/185K	**3/8”**	**1/4”**	**7.5**	**5**	**15**	**20**
MA125/245K	**1/2”**	**1/4”**	**7.5**	**5**	**15**	**20**

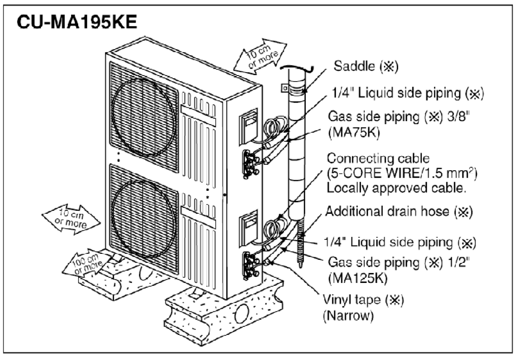
Indoor/Outdoor unit installation diagram

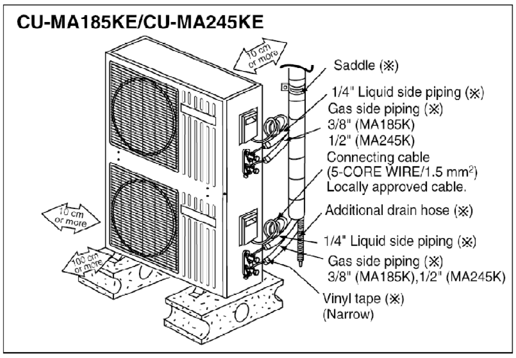

Length of power supply cord
about 1.1 m
about 1.8 m
Piping direction
(Front side)
Right
Right rear
Right bottom
Left rear
Left
Left bottom
Attention not to bend up drain hose
Installation parts you should purchase (※)
Installation plate 1
Sleeve (※)
Bushing-Sleeve (※)
Putty (Gum type sealer) (※)
5 cm or more
5 cm or more
Air purifying filter 5
(Left and right are identical)
Vinyl tape (Wide) (※)
Insulation of piping connection
Attaching the remote control holder to the wall
Remote control holder fixing screws 9
Remote control 3
Remote control holder 8

Bend the pipe as closely on the wall as possible, but be careful that it doesn't break.

- Apply after carrying out a drainage test.
- To carry out the drainage test, remove the air filters and pour water into the heat exchanger.

- Carry out insulation after checking for gas leaks and secure with vinyl tape.


CU-MA195KE
10 cm or more
10 cm or more
100 cm or more
Saddle (※)
1/4" Liquid side piping (※)
Gas side piping (※) 3/8" (MA75K)
Connecting cable (5-CORE WIRE/1.5 mm^2) Locally approved cable.
Additional drain hose (※)
1/4" Liquid side piping (※)
Gas side piping (※) 1/2" (MA125K)
Vinyl tape (※) (Narrow)


CU-MA185KE/CU-MA245KE
10 cm or more
10 cm or more
100 cm or more
Saddle (※)
1/4" Liquid side piping (※)
Gas side piping (※) 3/8" (MA185K) 1/2" (MA245K)
Connecting cable (5-CORE WIRE/1.5 mm^2) Locally approved cable.
Additional drain hose (※)
1/4" Liquid side piping (※)
Gas side piping (※) 3/8" (MA185K),1/2" (MA245K)
Vinyl tape (※) (Narrow)

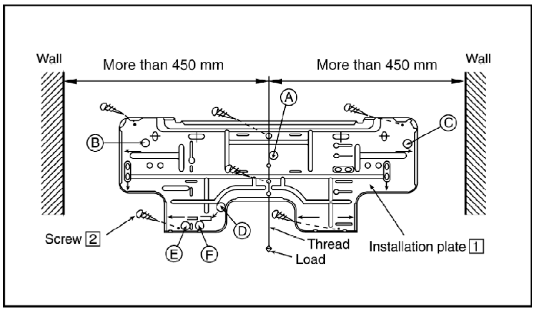
- **This illustration is for explanation purposes only. / The indoor unit will actually face a different way.**

10.2. INDOOR UNIT

10.2.1. SELECT THE BEST LOCATION / (Refer to “Select the best location” section)

10.2.2. HOW TO FIX INSTALLATION PLATE

The mounting wall is strong and solid enough to prevent it from the vibration.


Wall
More than 450 mm
More than 450 mm
Wall
A
B
C
D
E
F
Screw 2
Thread
Load
Installation plate 1

**Ⓐ : Unit centre should be at more than 450 mm at right and left of the wall.
The height should be more than 195 mm from the ceiling.**

Ⓑ : From installation plate end to unit left side end is 50 mm.

Ⓒ : From installation plate end to unit right side end is 50 mm.

Ⓓ : Connecting cable should be about 750 mm from this line. (Only for left rear piping)

Ⓔ : For left side piping, piping connection for liquid should be here.

Ⓕ : For left side piping, piping connection for gas should be here.

1. **Mount the installation plate on the wall with four screws. / (If mounting the unit on the concrete wall consider using anchor bolts.)**
    - **Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.**
2. **Drill the piping plate hole with ø70 mm hole-core drill.**
    - **Line according to the arrows marked on the lower left and right side of the installation plate. The meeting point of the extended line is the centre of the hole.**
    - **Drill the piping hole at either the right or the left and the hole should be slightly slanted to the outdoor side.**

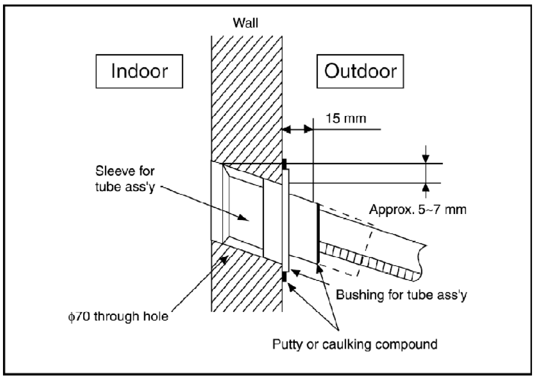
10.2.3. TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

1. **Insert the piping sleeve to the hole.**
2. **Fix the bushing to the sleeve.**
3. **Cut the sleeve until it extrudes about 15 mm from the wall.**

Caution

When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the indoor/ outdoor connecting cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.


Wall
Indoor
Outdoor
15 mm
Sleeve for tube ass'y
Approx. 5~7 mm
Bushing for tube ass'y
ϕ70 through hole
Putty or caulking compound

10.2.4. INDOOR UNIT INSTALLATION

1. For the right rear piping

Pull out the Indoor piping

⬇

Install the Indoor Unit

⬇

Secure the Indoor Unit

⬇

Insert the connecting cable

2. For the right and right bottom piping

Pull out the Indoor piping

⬇

Install the Indoor Unit

⬇

Insert the connecting cable

⬇

Secure the Indoor Unit

3. For the embedded piping

Replace the drain hose

Bend the embedded piping

- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

Install the Indoor Unit

Cut and flare teh embedded piping

- When determing the dimension of the piping, slide the unit all the way to the left on the installation plate.
  Refer to the section "Cutting and flaring the piping".

Pull the connecting cable into Indoor Unit

- The inside and outside connecting cable can be connected without removing the front grille.

Connect the piping

- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

Insulate and finish the piping

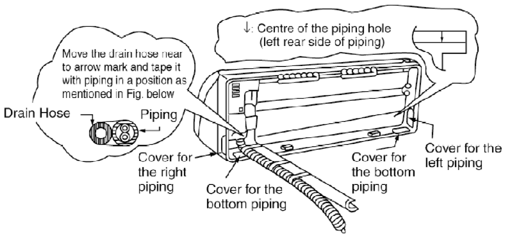
- Please refer to "Piping and finishing" column of outdoor section and "Insulation of piping connections" column as mentioned in Indoor/ Outdoor Unit Installation.

Install clamping cover of piping

- Refer to figure on next page.

Secure the Indoor Unit

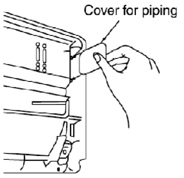
Pull out the piping and drain hose


↓: Centre of the piping hole (left rear side of piping)
Move the drain hose near to arrow mark and tape it with piping in a position as mentioned in Fig. below
Drain Hose
Piping
Cover for the right piping
Cover for the bottom piping
Cover for the bottom piping
Cover for the left piping

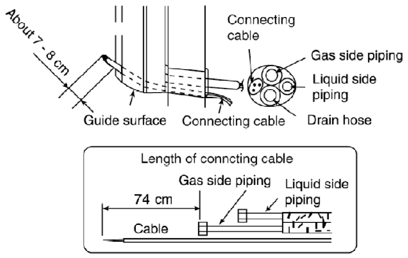
How to keep the cover

In case of the cover is cut, keep the cover at the rear of chassis as shown in the illustration for future reinstallation.

(Left, right and 2 bottom covers for piping)

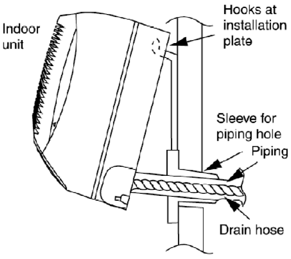

Cover for piping

Insert the connecting cable


About 7 - 8 cm
Connecting cable
Gas side piping
Liquid side piping
Guide surface
Connecting cable
Drain hose
Length of conncting cable
Gas side piping
Liquid side piping
74 cm
Cable

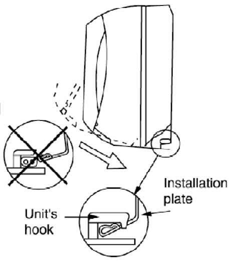
Install the indoor unit

Hook the indoor unit onto the upper portion of installation plate (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving it in left and right.

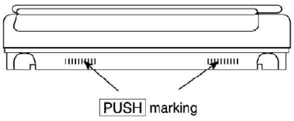

Indoor unit
Hooks at installation plate
Sleeve for piping hole
Piping
Drain hose

Secure the indoor unit

1. Tape the extra power supply cord in a bundle and keep it behind the chassis.
   - Ensure that the power supply cord is not clamped in between the unit's hook (2 positions) and installation plate
2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slots (sound click).


Installation plate
Unit's hook

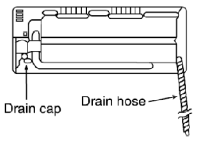
To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.

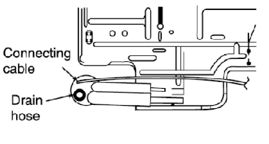

PUSH marking

(This can be used for left rear piping and left bottom piping also.)

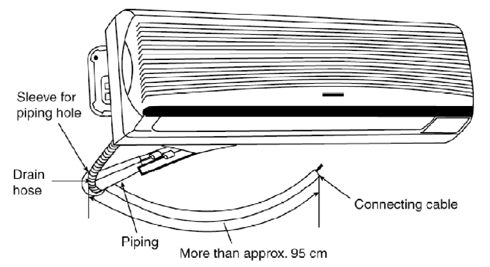
Exchange the drain hose and the cap

Refer view for left piping installation

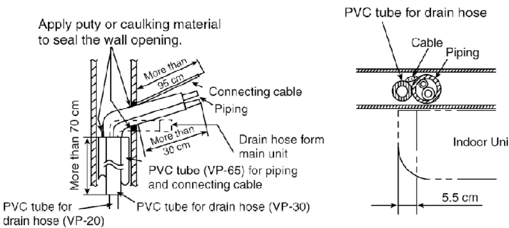

Drain cap
Drain hose


Connecting cable
Drain hose

Adjust the piping slightly downwards


Sleeve for piping hole
Drain hose
Connecting cable
Piping
More than approx. 95 cm

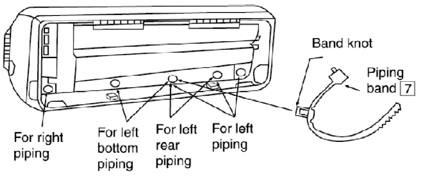
- How to pull the piping and drain hose out, in case of the embedded piping.


Apply puty or caulking material to seal the wall opening.
More than 95 cm
Connecting cable
Piping
More than 70 cm
More than 30 cm
Drain hose form main unit
PVC tube (VP-65) for piping and connecting cable
PVC tube for drain hose (VP-20)
PVC tube for drain hose (VP-30)
PVC tube for drain hose
Cable
Piping
Indoor Unit
5.5 cm

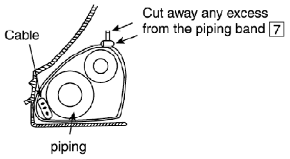
Be sure to insulate the PVC tube for drain hose

ATTACHMENT OF THE PIPING BAND

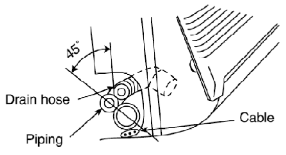
- For the right rear piping, it is not necessary to use piping band. The piping band can be attached when the extension flare pipe is used or when doing the piping work (under condition as shown in the diagram below) on the floor.
- The location to attach the piping band change according to the direction of the piping. Press the band knot to the hole in order to fix the band as shown in diagram below.


Band knot
Piping band 7
For right piping
For left bottom piping
For left rear piping
For left piping

- Tighten the band so that the cable and the piping are secure. Be sure to cut any excess from the piping band (failure to cut away the excess piping band may produce abnormal noise during operation of condensation).


Cable
Cut away any excess from the piping band 7
piping

- In case of left piping how to insert the connecting cable and drain hose.


45°
Drain hose
Piping
Cable

(For the right piping, follow the same procedure)

10.2.5. CONNECT THE CABLE TO THE INDOOR UNIT

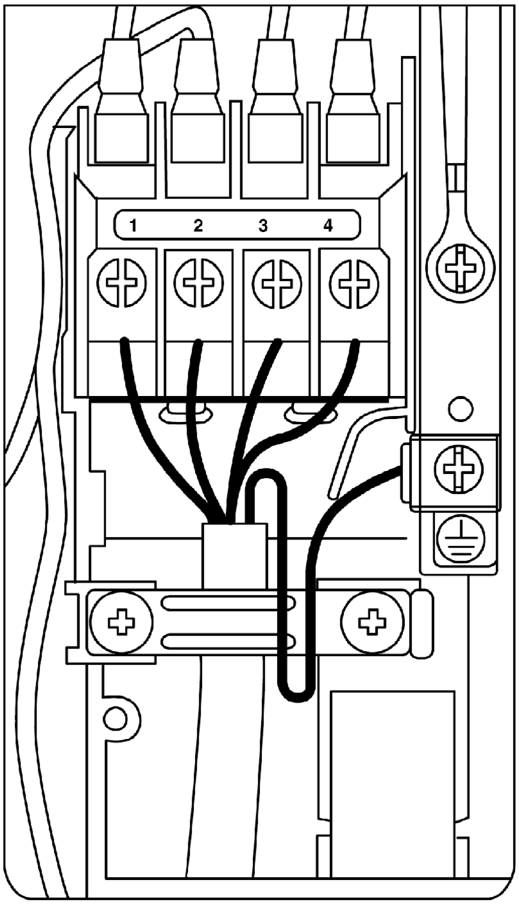
1. **The inside and outside connecting cable can be connected without removing the front grille.**

2. Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 5 × 1.5 mm^2 flexible cord, type designation H05 RN-F or heavier cord.

   - Ensure the color of wires of outdoor unit and the terminal Nos. are the same to the Indoor’s respectively.
   - Earth lead wire shall be longer than the other lead wires as shown in the figure for the electrical safety in case of the slipping out of the cord from the anchorage. /

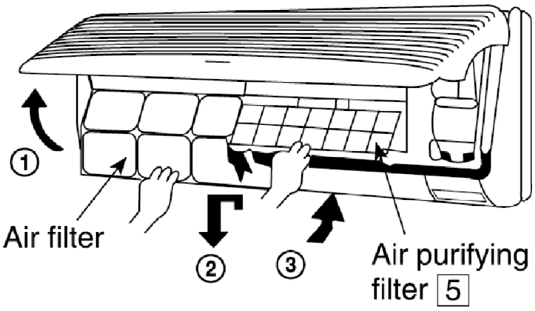
Terminals on the indoor unit	1	2	3	4	⏚
Color of wires	░	░	▒	▓	█
Terminals on the outdoor unit	1	2	3	4	⏚

   - Secure the cable onto the control board with the holder (clamper).



INSTALLATION OF AIR PURIFYING FILTERS

1. **Open the front panel.**
2. **Remove the air filters.**
3. **Hold the purifying filters by their tabs and install as shown in the illustration at below.**

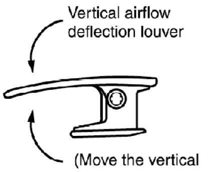

①
Air filter
②
③
Air purifying filter 5

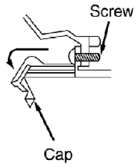
HOW TO TAKE OUT FRONT GRILLE

Please follow below steps to take out front grille if necessary such as when servicing.

1. **Set the vertical airflow direction louver to the horizontal position.**
2. **Slide down the two caps on the front grille as shown in the illustration below, and then remove the two mounting screws.**
3. **Pull the lower section of the front grille towards you to remove the front grille.**

When reinstalling the front grille, first set the vertical airflow direction louver to the horizontal position and then carry out above steps 2 - 3 in the reverse order.

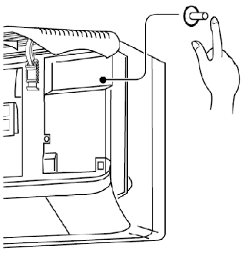

Vertical airflow deflection louver
(Move the vertical vane to horizontal)



AUTO SWITCH OPERATION

The below operations will be performed by pressing the "AUTO" switch.

1. **AUTO OPERATION MODE**
   The Auto operation will be activated immediately once the Auto Switch is pressed.
2. **TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)**
   The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. to below 10 sec. A "pep" sound will occur at the fifth sec., in order to identify the starting of Test Run operation
3. **REMOTE CONTROLLER RECEIVING SOUND ON/OFF**
   The ON/OFF of Remote Controller receiving sound can be change over by pressing the "AUTO" Switch continuously for 10 sec. and above. A "pep", "pep" sound will occur at the tenth sec., in order to indicate the "ON/OFF" change over of remote control receiving sound.



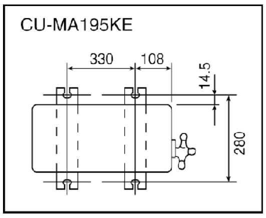
10.3. OUTDOOR UNIT

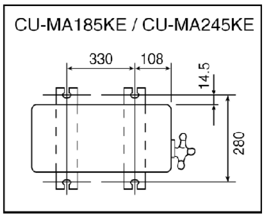
10.3.1. SELECT THE BEST LOCATION / (Refer to "Select the best location" section)

10.3.2. INSTALL THE OUTDOOR UNIT

- **After selecting the best location, start installation according to Indoor/outdoor Unit Installation Diagram.**

1. **Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut. (10 mm).**
2. **When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.**


CU-MA195KE
330
108
14.5
280


CU-MA185KE / CU-MA245KE
330
108
14.5
280

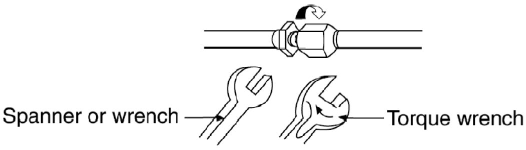
10.3.3. CONNECTING THE PIPING

Connecting the Piping to Indoor Unit

Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using piping)

Connect the piping

- **Align the center of piping and sufficiently tighten the flare nut with fingers.**
- **Further tighten the flare nut with torque wrench in specified torque as stated in the table.**

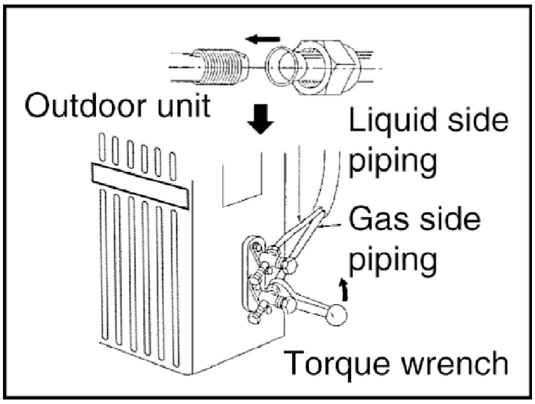

Spanner or wrench
Torque wrench

MODEL	Piping size (Torque)	
	Gas	Liquid
MA75K/MA185K	3/8" (42 N.m)	1/4" (18 N.m)
MA125K/ MA245K	1/2" (55 N.m)	1/4" (18 N.m)

Connecting the Piping to Outdoor Unit

Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (located at valve) onto the copper pipe.

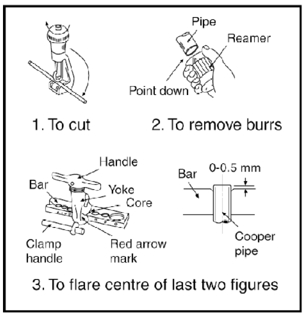
Align center of piping to valves and then tighten with torque wrench to the specified torque as stated in the table.

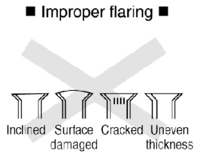

Outdoor unit
Liquid side piping
Gas side piping
Torque wrench

CUTTING AND FLARING THE PIPING

1. Please cut using pipe cutter and then remove the burrs.

2. Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused.
   Turn the piping and down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.

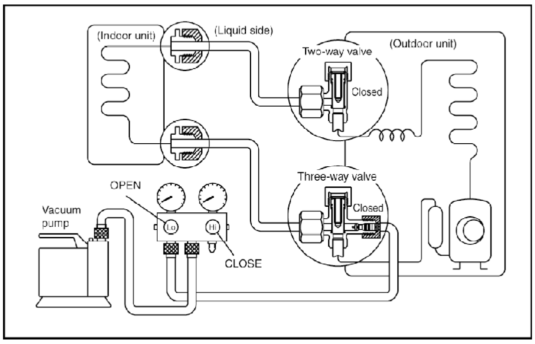

Pipe
Reamer
Point down
1. To cut
2. To remove burrs
Handle
Bar
Yoke
Core
Bar
0-0.5 mm
Clamp handle
Red arrow mark
Cooper pipe
3. To flare centre of last two figures


■ Improper flaring ■
Inclined
Surface damaged
Cracked
Uneven thickness

When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connectors, carefully check the flare finish.

10.3.4. EVACUATION OF THE EQUIPMENT

WHEN INSTALLING AND AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.


(Indoor unit)
(Liquid side)
Two-way valve
(Outdoor unit)
Closed
Three-way valve
Closed
OPEN
Vacuum pump
Lo
Hi
CLOSE

1. Connect a charging hose with a push pin to the Low and High side of a charging set and the service port of the 3-way valve.
   - Be sure to connect the end of the charging hose with the push pin to the service port.
2. Connect the center hose of the charging set to a vacuum pump.
3. Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air approximately ten minutes.
4. Close the valve of both the Low and High sides of the charging set and turn off the vacuum pump. Make sure that the needle in

the gauge does not move after approximately five minutes.
Note: BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.

5. **Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.**
6. **Tighten the service port caps of the 3-way valve at torque of 18 N.m with a torque wrench.**
7. **Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to "OPEN" using a hexagonal wrench (4 mm).**
8. **Mount valve caps onto the 2-way valve and the 3-way valve.**

- Be sure to check for gas leakage.

CAUTION

- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step 3 above take the following measure:

- If the leak stops when the piping connections are tightened further, continue working from step 3.

- If the leak does not stop when the connections are retightened, repair the location of leak.

- Do not release refrigerant during piping work for installation and re-installation. Take care of the liquid refrigerant, it may cause frostbite.

10.3.5. CONNECT THE CABLE TO THE OUTDOOR UNIT

1. **Remove the control board cover from the unit by loosening the screw.**
2. **Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 5 × 1.5 mm^{2} flexible cord, type designation H05 RN-F or heavier cord.**

Terminals on the indoor unit	1	2	3	4	⏚
Color of wires	░	▒	▓	▓	█
Terminals on the outdoor unit	1	2	3	4	⏚

3. Secure the cable onto the control board with the holder (clamper).

4. Attach the control board cover back to the original position with the screw.

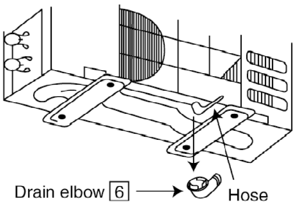
10.3.6. PIPE INSULATION

1. Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.

2. If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

DISPOSAL OF OUTDOOR UNIT DRAIN WATER

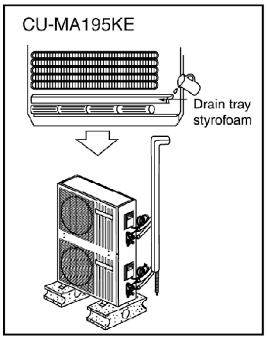
- **If a drain elbow is used, the unit should be placed on a stand which is taller than 3 cm.**
- **If the unit is used in an area where temperature falls below 0°C for 2 or 3 days in succession, it is recommended not to use a drain elbow, for the drain water freezes and the fan will not rotate.**

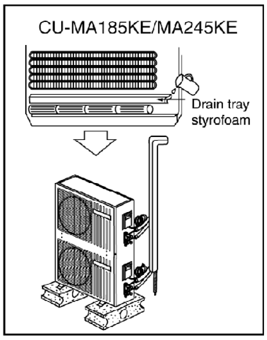


Install the hose at an angle so that the water smoothly flows out.

CHECK THE DRAINAGE

- **Open front panel and remove air filters. / (Drainage checking can be carried out without removing the front grille.)**
- **Pour a glass of water into the drain tray-styrofoam.**
- **Ensure that water flows out from drain hose of the indoor unit.**


CU-MA195KE
Drain tray
styrofoam

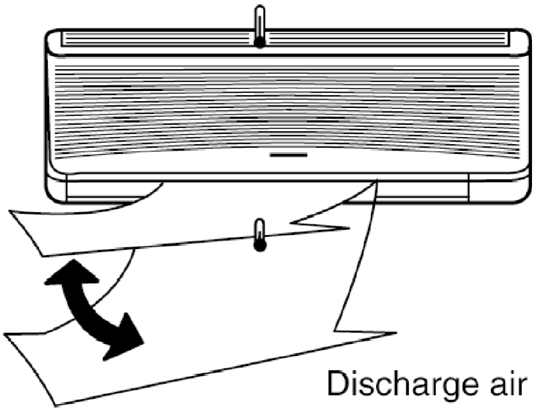

CU-MA185KE/MA245KE
Drain tray
styrofoam

EVALUATION OF THE PERFORMANCE

- Operate the unit at cooling operation mode for fifteen minutes or more.

- Measure the temperature of the intake and discharge air.

- Ensure the difference between the intake temperature and the discharge is more than 8°C.


Discharge air

NOTE

These equipment shall be connected to a suitable mains network with a main impedance less than the following:

CS-MA125KE/CU-MA195KE, CS-MA125KE/CU-MA245KE: 0.32 Ω

NOTE

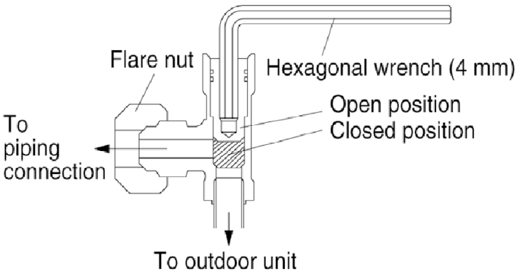
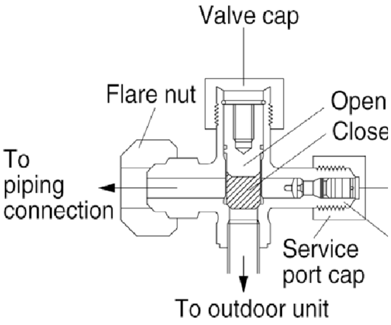
These equipment shall be connected to a suitable mains network with a main impedance less than the following:

CS-MA95KE / CU-MA185KE: 0.43 Ω

CHECK ITEMS

- ☐ Is there any gas leakage at flare nut connections?
- ☐ Has the heat insulation been carried out at flare nut connection?
- ☐ Is the connecting cable being fixed to terminal board firmly?
- ☐ Is the connecting cable being clamped firmly?
- ☐ Is the drainage OK? (Refer to "Check the drainage" section)
- ☐ Is the earth wire connection properly done?
- ☐ Is the indoor unit properly hooked to the installation plate?
- ☐ Is the power supply voltage complied with rated value?
- ☐ Is there any abnormal sound?
- ☐ Is the cooling operation normal?
- ☐ Is the thermostat operation normal?
- ☐ Is the remote control's LCD operation normal?
- ☐ Is the air purifying filter installed?

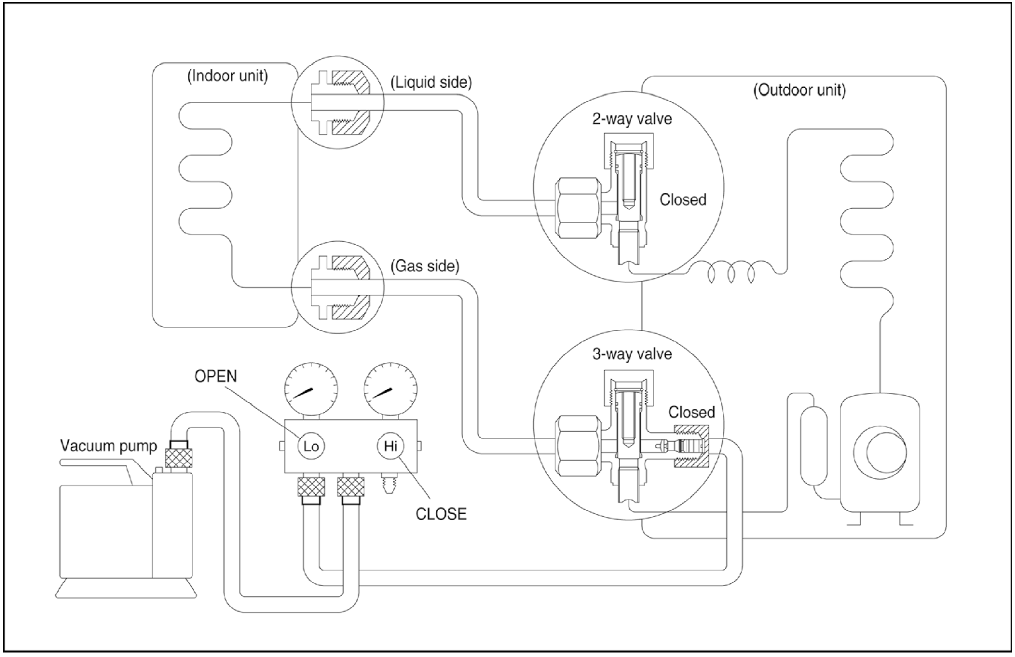
11. 2-way, 3-way Valve

	2-way Valve (Liquid Side)	3-way Valve (Gas Sid	
	 Flare nut Hexagonal wrench (4 mm) To piping connection Open position Closed position To outdoor unit	 Valve cap Flare nut Open Close To piping connection Service port cap To outdoor unit	
Works	**Shaft Position**	**Shaft Position**	**Servi**
Shipping	**Close** **(With valve cap)**	**Closed** **(With valve cap)**	**Clo** **(Wit**
Evacuation **(Installation and** **Re-installation)**	**Closed** **(Counter-Clockwise)**	**Closed** **(Clockwise)**	**O** **(Pus**
Operation	**Open** **(With valve cap)**	**Open** **(With valve cap)**	**Clo** **(Wit**
Pumping down **(Transferring)**	**Closed** **(Clockwise)**	**Open** **(Counter-Clockwise)**	**O** **(Con** **manifol**
Evacuation **(Servicing)**	**Open**	**Open**	**O** **With vac**
Gas charging **(Servicing)**	**Open**	**Open**	**O** **(With c** **cyli**
Pressure check **(Servicing)**	**Open**	**Open**	**O** **(Con** **manifol**

	2-way Valve (Liquid Side)	3-way Valve (Gas Sid	
Gas releasing (Servicing)	Open	Open	Op (Conn manifol

11.1. Evacuation of Installation

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.
If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Closed
(Gas side)
3-way valve
OPEN
Closed
Vacuum pump
Lo
Hi
CLOSE

Procedure:

1. **Connect a charging hose with a push pin to the Low side of a charging set and the service port of a 3-way valve.**
    - **Be sure to connect the end of the charging hose with the push pin to the service port.**
2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 MPa (0 cmHg) to -0.1 MPa (-76 cmHg). Then evacuate the air for approximately ten minutes.**

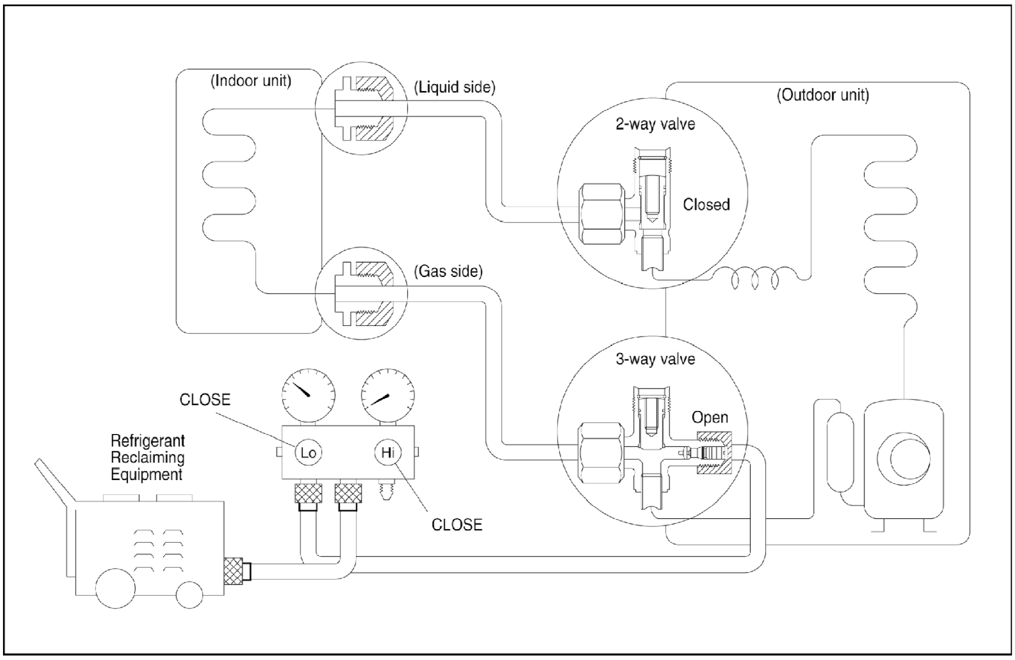
4. Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.
   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.
5. Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.
6. Tighten the service port cap at a torque of 18 N.m with a torque wrench.
7. Remove the valve caps of the 2-way valve and the 3-way valve. Position both of the valves to “open” using a hexagonal wrench (4 mm).
8. Mount the valve caps onto the 2-way and 3-way valves.

   - Be sure to check for gas leakage.

Caution

If gauge needle does not move from 0 cmHg to -76 cmHg in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step (3).
If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.2. Pumping down


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Closed
(Gas side)
3-way valve
CLOSE
Open
Refrigerant
Reclaiming
Equipment
Lo
Hi
CLOSE

Procedure:

1. Confirm that both the 2-way and 3-way valves are set to the opened position.
    - Remove the valve stem caps and confirm that the valve stems are in the opened position.
    - Be sure to use a hexagonal wrench to operate the valve stems.
2. Operate the unit for 10 to 15 minutes.
3. Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.
    - Connect the charge hose with the push pin to the Gas service port.
4. Air purging of the charge hose.
    - Open the low-pressure valve on the charge set slightly to purge air from the charge hose.
5. Set the 2-way valve to the closed position.
6. Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0 MPa (0 kg/cm$_2$G).

   If the unit cannot be operated at the cooling condition (weather is rather cool), short the Pumping Down pins on the Main Control

P.C.B.
(Simply press the pumping down button if it is equipped.)
So that the unit can be operated.

7. Immediately set the 3-way valve to the closed position.

- **Do this quickly so that the gauge ends up indicating 0.1 MPa (1 kg/cm^{2}G) to 0.3 MPa (3 kg/cm^{2}G).**

8. Use refrigerant reclaiming equipment to collect refrigerant from indoor unit and pipes.

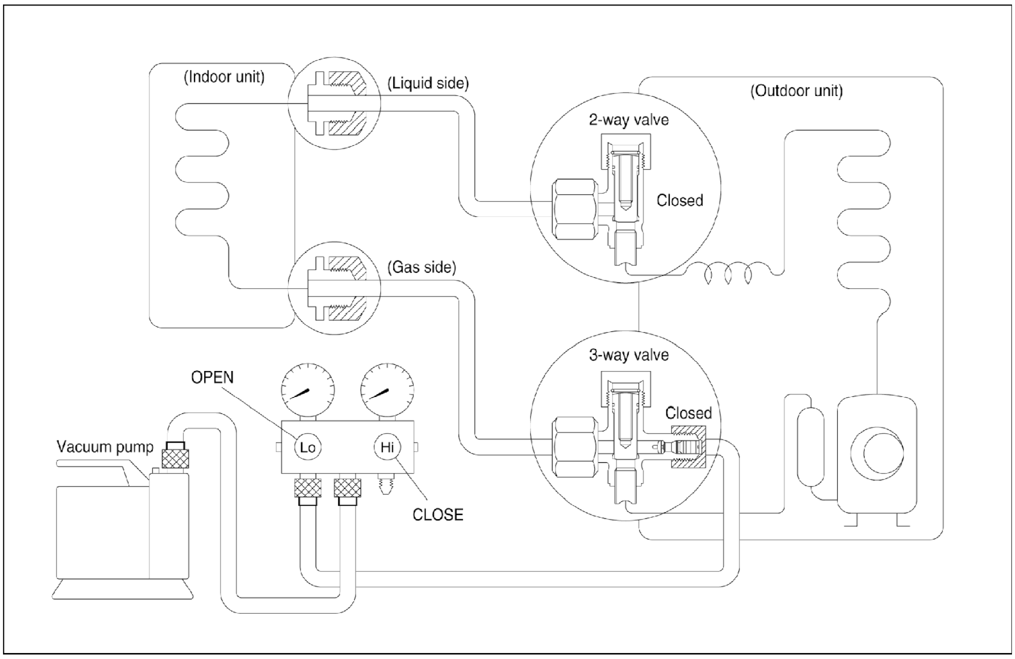
9. Disconnect the charge set, and mount the 2-way and 3-way valve's stem caps and the service port caps.

- **Use a torque wrench to tighten the service port cap to a torque of 18 N.m.**
- **Be sure to check for gas leakage.**

10. Disconnect pipes from indoor unit and outdoor unit.

11.3. Evacuation of Re-installation

WHEN REINSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.
If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Closed
(Gas side)
3-way valve
Closed
OPEN
Vacuum pump
Lo
Hi
CLOSE

Procedure:

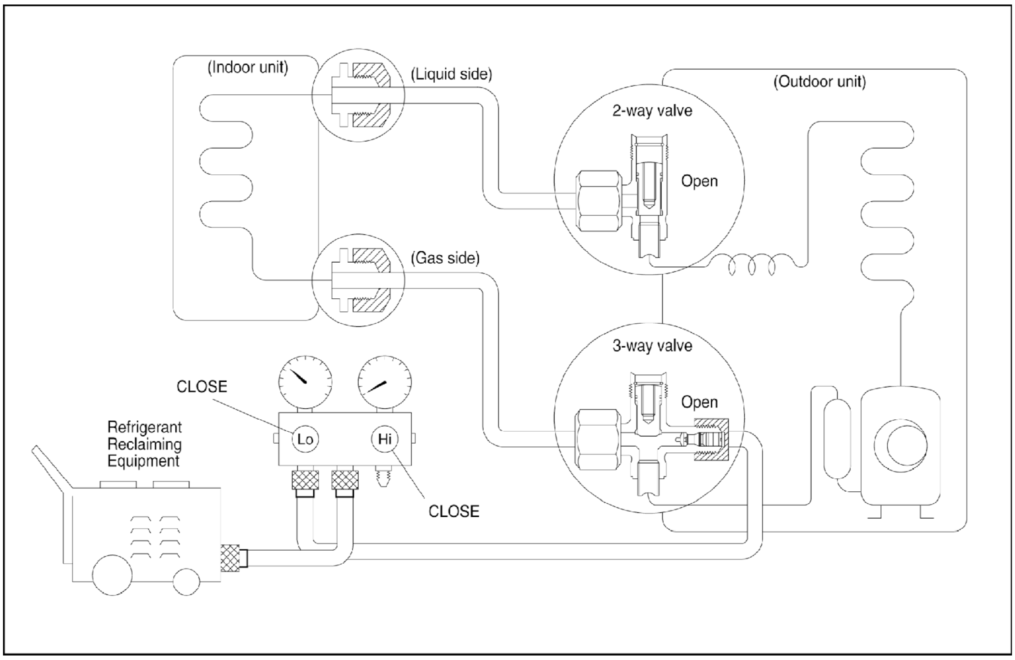
1. **Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.**
   - **Be sure to connect the end of the charging hose with the push pin to the service port.**
2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 MPa (0 cmHg) to -0.1 MPa (-76 cmHg). Then evacuate the air for approximately ten minutes.**
4. **Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.**
   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump.**
6. **Charge the pipes and indoor unit with gas refrigerant from 3-way valve service port, and then discharge the refrigerant until low side (gas side) gauge needle indicates 0.3 MPa (3 kg/cm$_2$).**
7. **Tighten the service port cap at a torque of 18 N.m with a torque wrench.**
8. **Remove the valve caps of the 2-way valve and the 3-way valve. Position both of the valves to "open" using a hexagonal wrench (4 mm).**
9. **Mount the valve caps onto the 2-way and 3-way valves.**
   - **BE SURE TO USE REFRIGERANT RECLAIMING EQUIPMENT WHILE DISCHARGING THE REFRIGERANT.**
   - **Purge the air from charge set's centre hose.**
   - **Be sure to check for gas leakage.**

Caution

If gauge needle does not move from 0 MPA (0 cmHg) to -0.1 MPa (-76 cmHg) in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step 3.
If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.4. Balance refrigerant of the 2-way, 3-way valves

(Lack of refrigerant in the refrigeration cycle)


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Open
(Gas side)
3-way valve
CLOSE
Open
Refrigerant Reclaiming Equipment
Lo
Hi
CLOSE

Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the open position.**
2. **Connect the charge set to the 3-way valve's service port.**
   - **Leave the valve on the charge set closed.**
   - **Connect the charge hose with the push-pin to the service port.**
3. **Connect the charge set's centre hose to refrigerant reclaiming equipment.**

- **Purge the air from charge hose.**

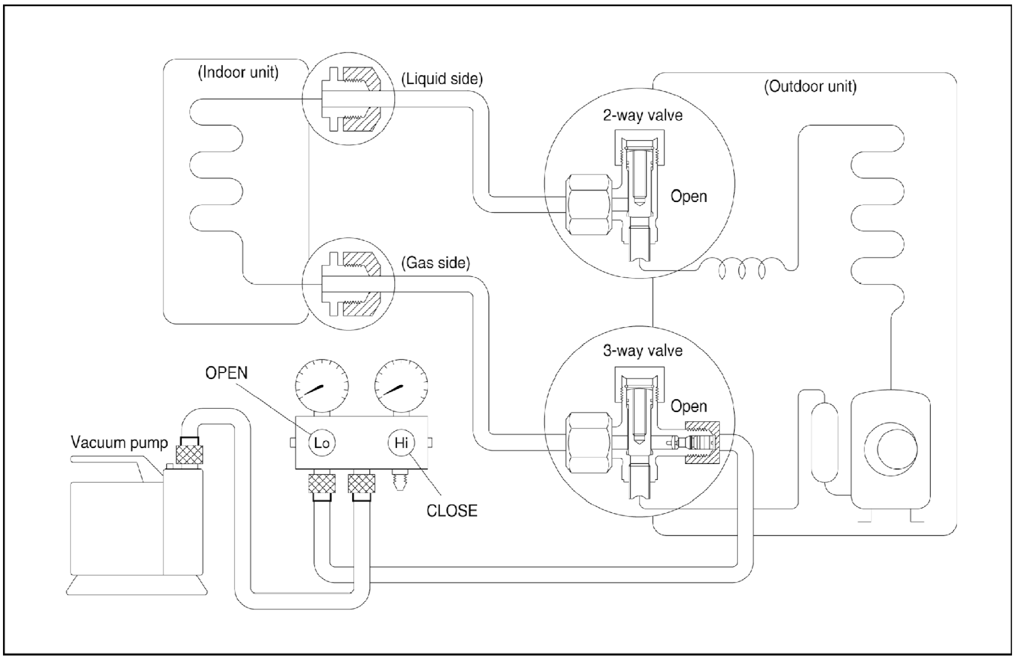
4. Open the valve (Low side) on the charge set and discharge the refrigerant until the gauge indicates 0.05 MPa (0.5 kg/cm$_2$G) to 0.1 MPa (1 kg/cm$_2$G).

- **If there is no air in the refrigeration cycle (the pressure when the air conditioner is not running is higher than 0.1 MPa (1 kg/cm2G), discharge the refrigerant until the gauge indicates 0.05 MPa (0.5 km/cm2G) to 0.1 MPa (1 kg/cm2G). If this is the case, it will not be necessary to apply a evacuation.**
- **Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will also be discharged.**

5. Turn on refrigerant reclaiming equipment.

11.5. Evacuation

(No refrigerant in the refrigeration cycle)


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Open
(Gas side)
3-way valve
OPEN
Open
Vacuum pump
Lo
Hi
CLOSE

Procedure:

1. Connect the vacuum pump to the charge set's centre hose.

2. Evacuation for approximately one hour.

- **Confirm that the gauge needle has moved toward -0.1 MPa (-76 cmHg) [vacuum of 4 mmHg or less.]**

3. Close the valve (Low side) on the charge set, turn off the vacuum

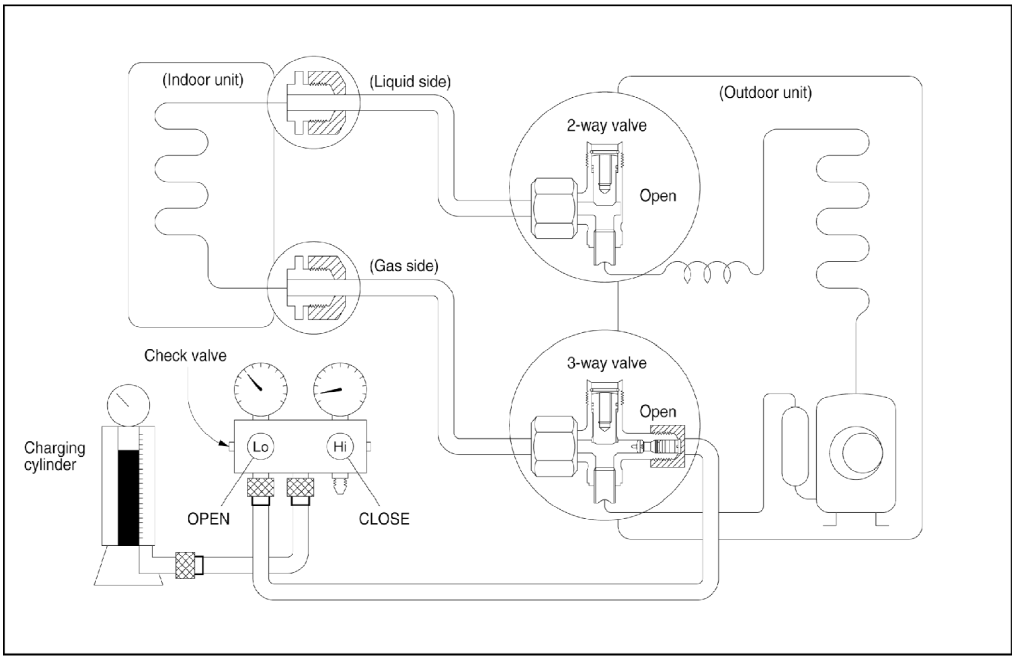
pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).

4. Disconnect the charge hose from the vacuum pump.

- Vacuum pump oil
If the vacuum pump oil becomes dirty or depleted, replenish as needed.

11.6. Gas charging

(After Evacuation)


(Indoor unit)
(Liquid side)
(Outdoor unit)
2-way valve
Open
(Gas side)
Check valve
3-way valve
Open
Charging cylinder
Lo
Hi
OPEN
CLOSE

Procedure:

1. Connect the charge hose to the charging cylinder.

- Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.

2. Purge the air from the charge hose.

- Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).

3. Open the valve (Low side) on the charge set and charge the system with liquid refrigerant.

- If the system cannot be charged with the specified amount of

refrigerant, it can be charged with a little at a time (approximately 150 g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin)

This is different from previous procedures. Because you are charging with liquid refrigerant from the gas side, absolutely do no attempt to charge with large amount of liquid refrigerant while operating the air conditioner.

4. Immediately disconnect the charge hose from the 3-way valve's service port.

- **Stopping partway will allow the refrigerant to be discharged.**
- **If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.**

5. Mount the valve stem caps and the service port cap.

- **Use torque wrench to tighten the service port cap to a torque of 18 N.m.**
- **Be sure to check for gas leakage.**

12. Servicing Information

- Inspection points for the Indoor Electronic Controller

1. The Electronic Controller, a signal Receiver and an Indicator (Fig. 2) can be seen by the below steps:

- **Remove the 2 caps and 2 screws at the bottom of the front grille. (Fig. 1)**
- **Remove the front grille by releasing the 2 hooks at the top of the front grille. (Fig. 1)**
- **Remove the control board cover by releasing the 2 tabs at left, 1 tab on top and 2 more tabs at right side of the control board cover. (Fig. 1)**

2. To remove the Electronic Controller, release the hook that

holding the electronic controller. (Fig. 2)

- Indoor Fan Motor removal procedure:-

1. Remove the control board by:-
   - Releasing CN-C (GRN) connector. (Fig. 2)
   - Releasing CN-FM (GRN) connector. (Fig. 2)
   - Releasing CN-STM connector. (Fig. 2)
   - Remove the earth wire screw. (Fig. 2)
   - Release the intake air sensor. (Fig. 2)
   - Release the piping sensor. (Fig. 2)
   - Unhook and release the terminal board. (Fig. 3)
   - Remove the right and left screws. (Fig. 3)
   - Then remove the control board by pressing down the hook at the left and press up the right hook. (Fig. 3)
2. Remove the Fan Motor by:-
   - Release the Fan motor leadwire by pressing the hook at the center of the connector. (Fig. 4)
   - Then remove the particular piece that holding the fan motor by pressing the tab. (Fig. 4)
   - Remove the discharge grille and then the drain hose. (Fig. 4)

Fig. 1

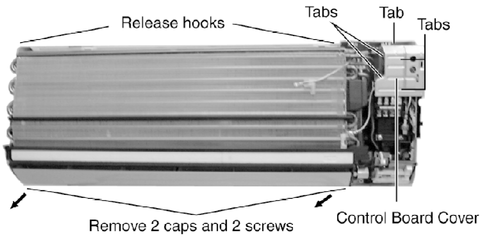

Release hooks
Tabs
Tab
Tabs
Remove 2 caps and 2 screws
Control Board Cover

Fig. 2

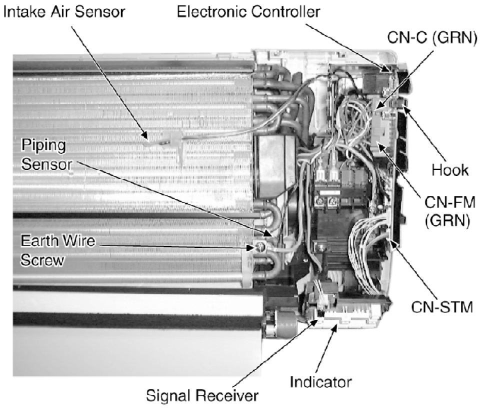

Intake Air Sensor
Electronic Controller
CN-C (GRN)
Piping Sensor
Hook
CN-FM (GRN)
Earth Wire Screw
CN-STM
Signal Receiver
Indicator

Fig. 3

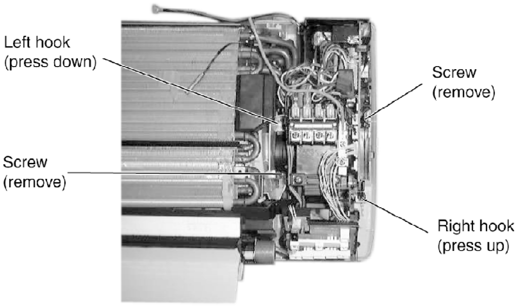
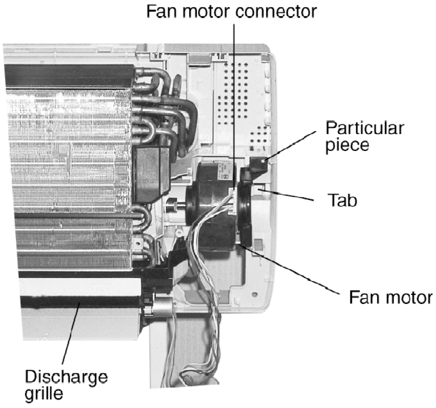

Left hook
(press down)
Screw
(remove)
Screw
(remove)
Right hook
(press up)

Fig. 4


Fan motor connector
Particular
piece
Tab
Fan motor
Discharge
grille

- **Finally remove the fan motor by removing the screw. (Fig. 5)**
- **REMINDER - To reinstall the fan motor, adjust the connector of the fan motor as Fig. 5.**

- Cross Flow Fan Removal Procedure.

1. **Remove the control board and the fan motor by referring to the "Indoor Fan Motor Removal Procedure".**
2. **Remove the evaporator screw. (Fig. 6)**
3. **Press the particular piece to loosen the evaporator. (Fig. 7)**
4. **Remove the bearing. (Fig. 7)**
5. **Push up the evaporator and take out the cross-flow Fan. (Fig. 7)**

Fig. 5

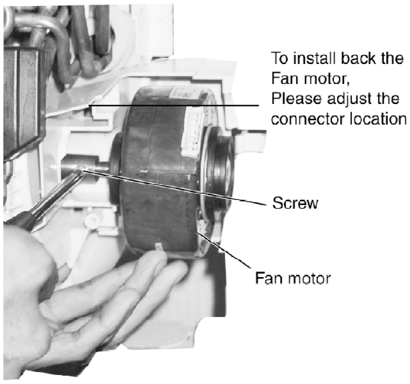

To install back the
Fan motor,
Please adjust the
connector location
Screw
Fan motor

Fig. 6

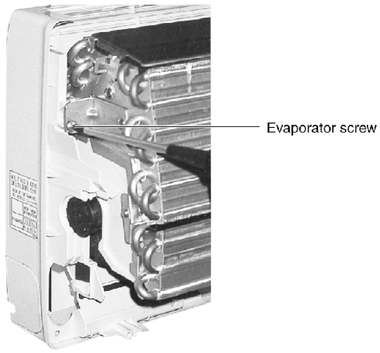
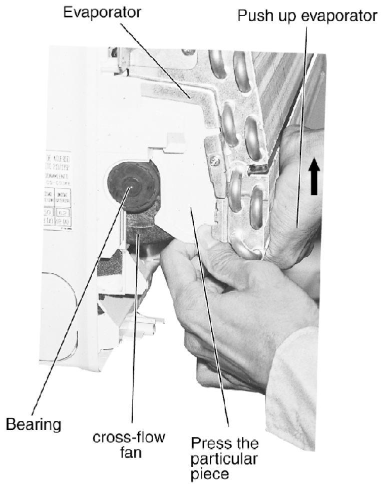

Evaporator screw

Fig. 7


Evaporator
Push up evaporator
Bearing
cross-flow fan
Press the particular piece

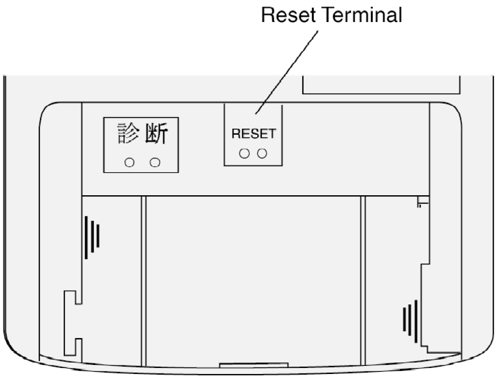
- **Remote Control Reset**

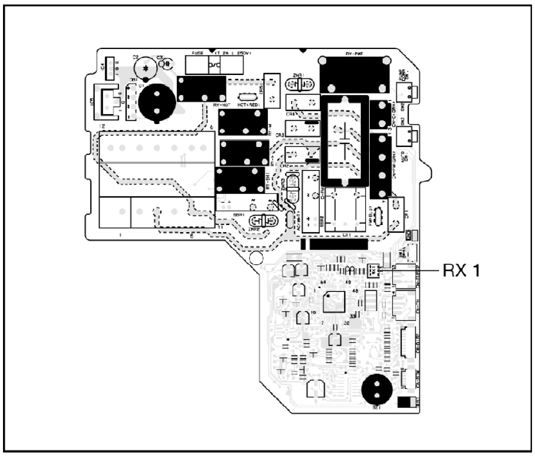
  When the batteries are inserted for the first time, or the batteries are replaced, all the indications will blink and the remote control might not work.

  If this happen, remove the back cover of the remote control and you will find a resetting terminal, and by shorting it with a minus screwdriver, it will return to normal.

- **Changing the wireless remote control transmission code**

  When two indoor units are installed in the same room, in order to prevent operating errors caused by using two remote controls, add a jumper wire to the remote control side (J-B) and a carbon resistor (1/4 W, 10 kW) to the indoor printed circuit (RX-1) board, it is possible to select from 2 types of transmission codes including one at time of delivery condition (1).





	Remote control	Indoor printed circuit board		Note
	J - B	SW1	RX1	
1	——	OPEN	——	At product delivery
2	Jumper wire	OPEN	10 kΩ	

NOTE: As of information in Electronic Circuit Diagram.

13. Troubleshooting Guide

13.1. Refrigeration cycle system

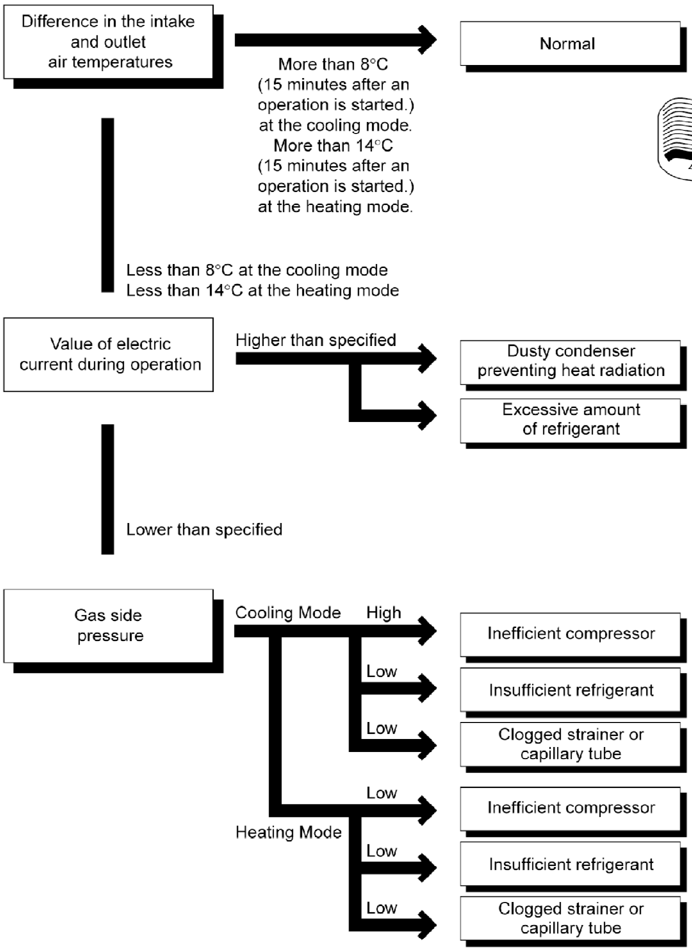
In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.

The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table to the right.

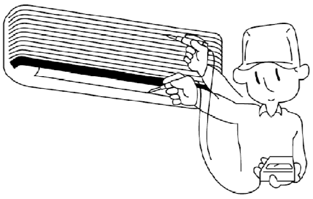
Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure Mpa (kg/cm^2G)	Outlet air temperature (°C)
Cooling Mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16
Heating Mode	1.5 ~ 2.1 (15 ~ 21)	36 ~ 45

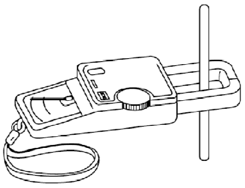
* Condition: Indoor fan speed; High
Outdoor temperature 35°C at the cooling mode and 7°C at the heating mode


Difference in the intake and outlet air temperatures
More than 8°C (15 minutes after an operation is started.) at the cooling mode. More than 14°C (15 minutes after an operation is started.) at the heating mode.
Normal
Less than 8°C at the cooling mode
Less than 14°C at the heating mode
Value of electric current during operation
Higher than specified
Dusty condenser preventing heat radiation
Excessive amount of refrigerant
Lower than specified
Gas side pressure
Cooling Mode
High
Inefficient compressor
Low
Insufficient refrigerant
Low
Clogged strainer or capillary tube
Heating Mode
Low
Inefficient compressor
Low
Insufficient refrigerant
Low
Clogged strainer or capillary tube

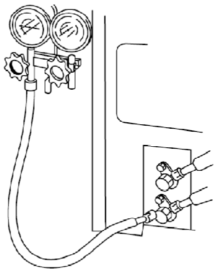
- **Measuring the air temperature difference**



- **Measuring electric current during operation**



- **Measuring gas side pressure**



13.1.1. Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditoner	Cooling Mode			Heating Mode		
	Low Pressure	High Pressure	Electric current during operation	Low Pressure	High Pressure	El cu du op
Insufficient refrigerant (gas leakage)	↘	↘	↘	↘	↘	↘
Clogged capillary tube or Strainer	↘	↘	↘	↘	↘	↘
Short circuit in the indoor unit	↘	↘	↘	↗	↗	↗
Heat radiation deficiency of the outdoor unit	↗	↗	↗	↘	↘	↘
Inefficient compression	↗	↘	↘	↗	↘	↘

- Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

13.1.2. Diagnosis methods of a malfunction of a compressor and 4-way valve

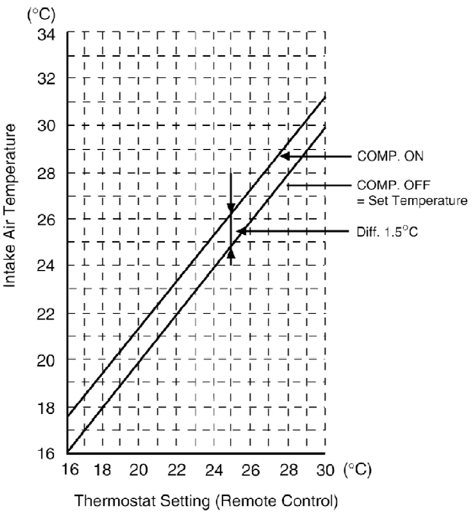
Nature of fault	Symptom
Insufficient compressing of a compressor	-Electric current during operation becomes approximately 20% lower than the normal valu -The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C). -The difference between high pressure and low pressure becomes almost zero.
Locked compressor	-Electric current reaches a high level abnormally, and the value exceeds the limit of an am some cases, a breaker turns off. -The compressor is a humming sound.
Insufficient switches of the 4-way valve	-Electric current during operation becomes approximately 80% lower than the normal valu -The temperature different between from the discharge tube to the 4-way valve and from s to the 4-way valve becomes almost zero.

14. Technical Data

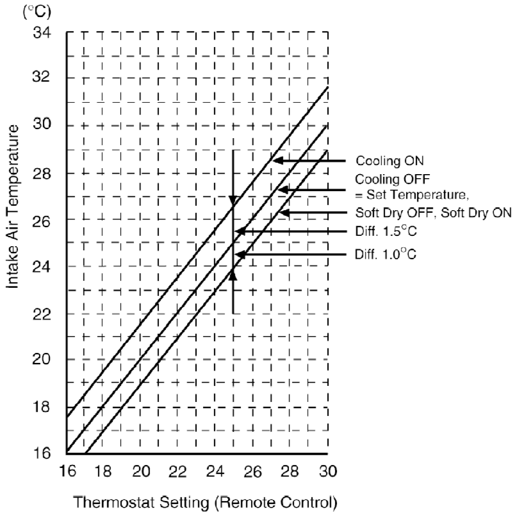
■ Thermostat characteristics

CS-MA75KE / CS-MA95KE / CS-MA125KE

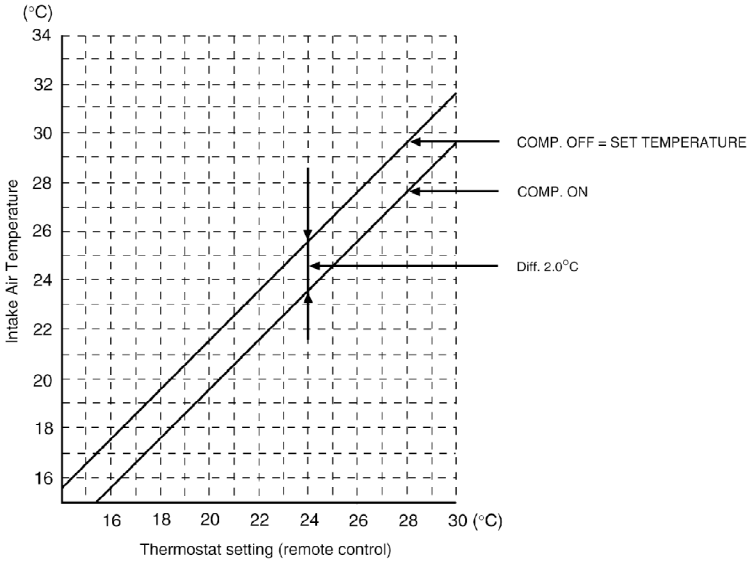
- **Cooling**



- **Soft Dry**



- **Heating**



■ Sensible Capacity Chart

- **CS-MA75KE**

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.03	1.54	0.60	1.90	1.48	0.65	1.77	1.42	0.70	1.72	1.35	0.75
19.0°C				2.05		0.66						
19.5°C	2.23	1.61	0.62	2.09	1.55	0.66	1.94	1.49	0.71	1.77	1.42	0.76
22.0°C	2.43	1.67	0.63	2.27	1.61	0.67	2.12	1.55	0.72	1.92	1.48	0.78

220V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	1.98	1.50	0.55	1.85	1.44	0.59	1.72	1.39	0.63	1.57	1.32	0.68
19.0°C				2.00		0.60						
19.5°C	2.18	1.57	0.56	2.04	1.51	0.60	1.89	1.46	0.64	1.72	1.39	0.69
22.0°C	2.37	1.63	0.57	2.22	1.57	0.61	2.06	1.51	0.66	1.88	1.44	0.71

- **CS-MA95KE**

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.63	1.99	0.86	2.46	1.91	0.93	2.28	1.84	0.99	2.08	1.75	1.07
19.0°C				2.65		0.94						
19.5°C	2.89	2.09	0.88	2.70	2.00	0.94	2.51	1.93	1.01	2.28	1.84	1.09
22.0°C	3.15	2.16	0.89	2.94	2.08	0.96	2.73	2.01	1.03	2.49	1.91	1.11

220V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.58	1.96	0.82	2.41	1.88	0.88	2.24	1.80	0.94	2.04	1.71	1.01
19.0°C				2.60		0.89						
19.5°C	2.83	2.05	0.83	2.65	1.97	0.89	2.46	1.89	0.96	2.24	1.80	1.03
22.0°C	3.09	2.12	0.85	2.88	2.04	0.91	2.68	1.97	0.97	2.44	1.88	1.05

- **CS-MA125KE**

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	3.47	2.63	1.15	3.24	2.52	1.23	3.02	2.43	1.32	2.74	2.30	1.42
19.0°C				3.50		1.25						
19.5°C	3.81	2.76	1.17	3.56	2.65	1.26	3.31	2.55	1.34	3.01	2.43	1.45
22.0°C	4.15	2.86	1.19	3.88	2.75	1.28	3.61	2.65	1.37	3.28	2.53	1.47

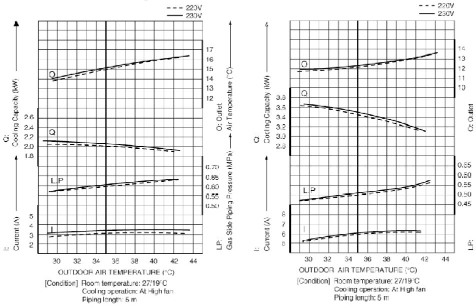
220V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	3.42	2.59	1.12	3.20	2.45	1.20	2.97	2.39	1.29	2.70	2.27	1.39
19.0°C				3.45		1.22						
19.5°C	3.76	2.72	1.14	3.51	2.61	1.22	3.27	2.51	1.31	2.97	2.39	1.41
22.0°C	4.10	2.82	1.16	3.83	2.71	1.25	3.56	2.61	1.33	3.24	2.49	1.44

TC - Total Cooling (kW) **Indoor 27°C/19°C**
SHC - Sensible Heat Capacity (kW) **Outdoor 35°C/24°C**
IP - Input Power (kw)

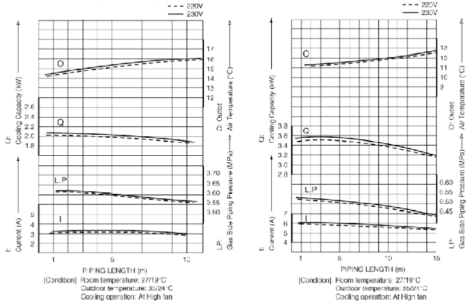
■ Operation characteristics

CS-MA75KE, CS-MA125KE / CU-MA195KE

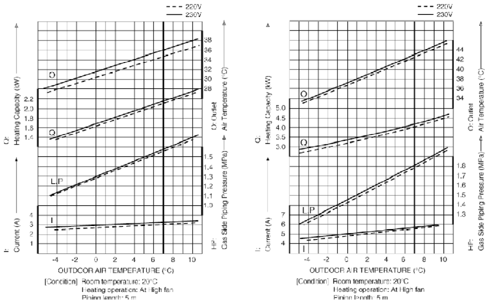
- **Cooling Characteristic**



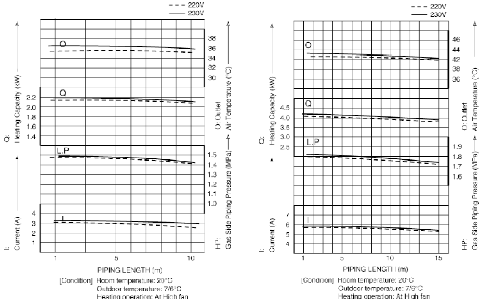
- **Piping Length Characteristic (Cooling)**



- **Heating Characteristic**



- **Piping Length Characteristic (Heating)**

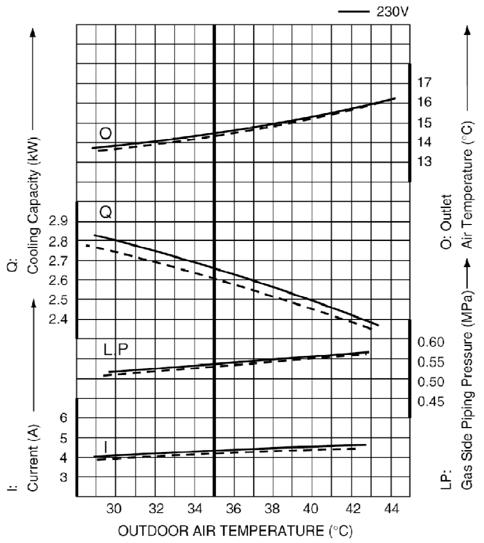


Operation characteristics

CS-MA95KE / CU-MA95KE

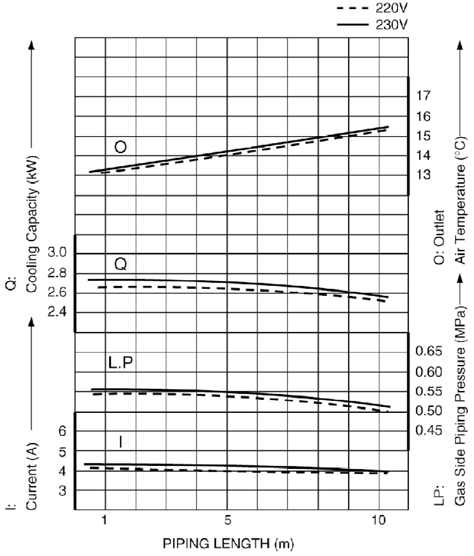
The capability value shown is the value for one unit. For a total for two units, multiply by 2.

- **Cooling Characteristic**



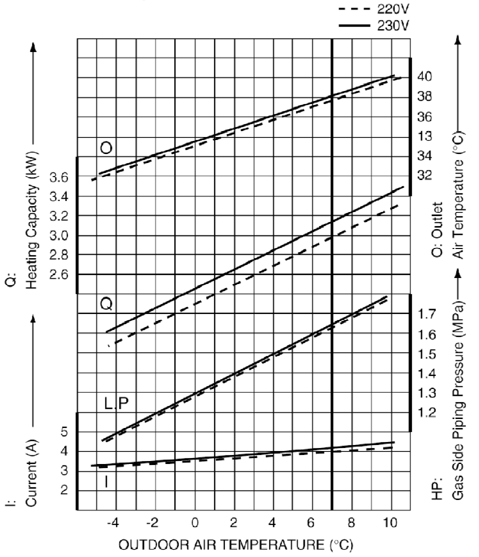
[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 5 m

- **Piping Length Characteristic (Cooling)**



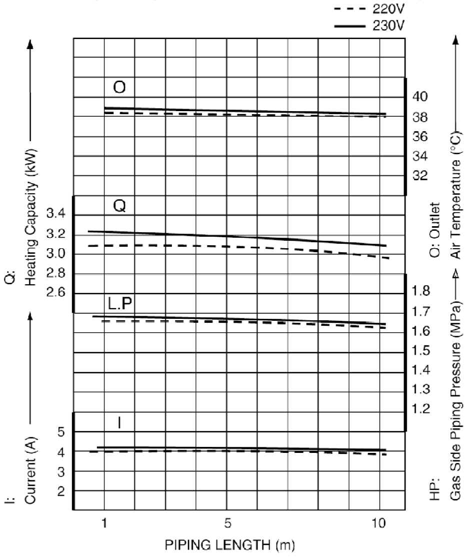
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling operation: At High fan

- **Heating Characteristic**



[Condition] Room temperature: 20°C
Heating operation: At High fan
Piping length: 5 m

- **Piping Length Characteristic (Heating)**



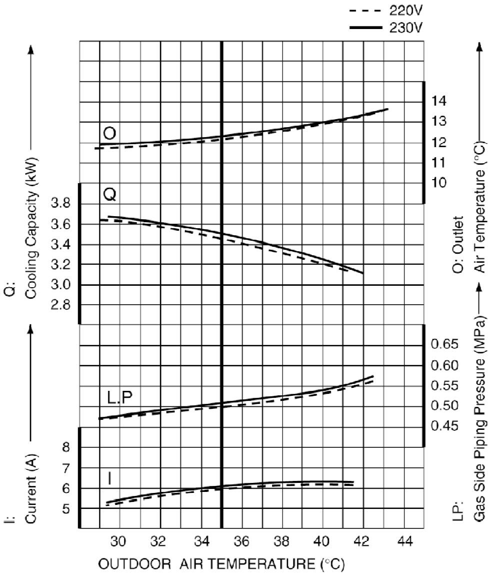
[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating operation: At High fan

Operation characteristics

CS-MA125KE / CU-MA245KE

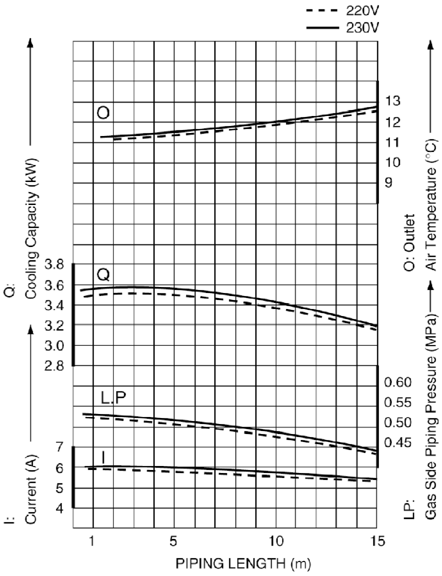
The capability value shown is the value for one unit. For a total for two units, multiply by 2.

- **Cooling Characteristic**



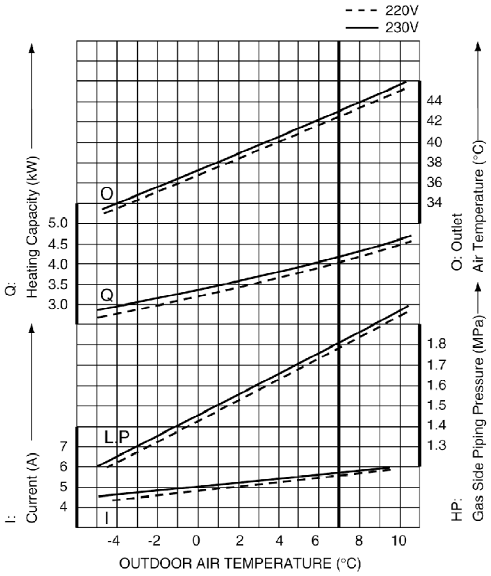
[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 5 m

- **Piping Length Characteristic (Cooling)**



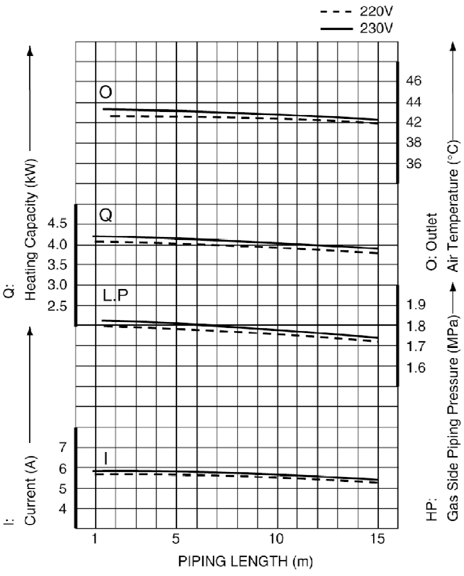
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling operation: At High fan

- **Heating Characteristic**



[Condition] Room temperature: 20°C
Heating operation: At High fan
Piping length: 5 m

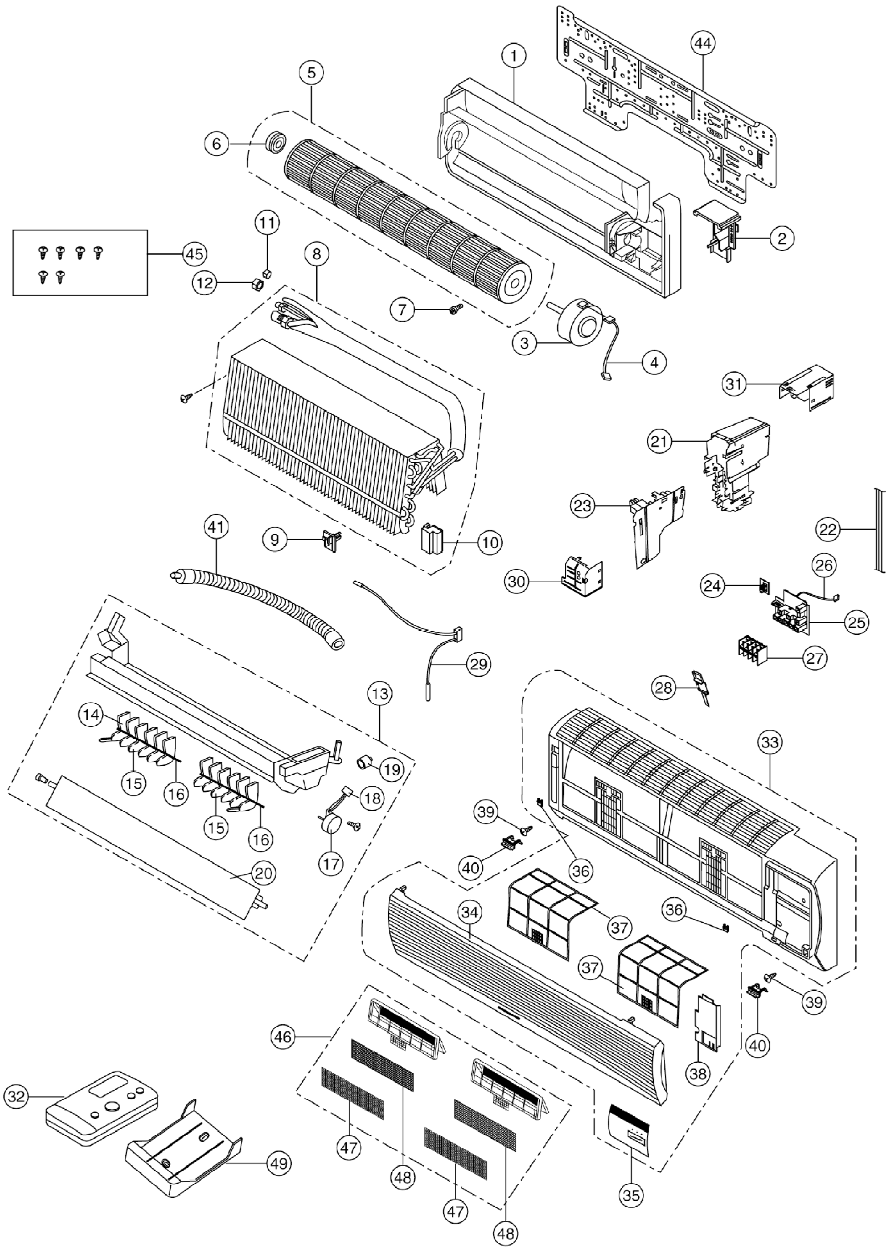
- **Piping Length Characteristic (Heating)**



[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating operation: At High fan

15. Exploded View

CS-MA75KE / CS-MA95KE / CS-MA125KE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Note:
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

16. Replacement Parts List

<Model: CS-MA75KE / CS-MA95KE / CS-MA125KE>

NO.	DESCRIPTION & NAME	Q’TY	CS-MA75KE	CS-MA95KE	CS-MA125KE	REMARKS
1	CHASSY COMPLETE	1	CWD50C338	←	←	
2	PARTICULAR PIECE	1	CWD931019	←	←	
3	FAN MOTOR	1	CWA921033	CWA921032	CWA921031	0
4	LEAD WIRE - FAN MOTOR	1	CWA67C2097	←	←	
5	CROSS FLOW FAN	1	CWH02C060	←	←	
6	BEARING	1	CWH64K007	←	←	
7	SCREW - CROSS FLOW FAN	1	CWH4580304	←	←	
8	EVAPORATOR & TUBE ASS’Y COMPLETE	1	CWB30C1059	←	CWB30C1060	
9	INTAKE AIR SENSOR HOLDER	1	CWH32142	←	←	
10	ANTI VIBRATION BUSHING	1	CWH50211	←	←	
11	FLARE NUT (1/4”)	1	CWH6002140	←	←	
12	FLARE NUT (1/2”) OR (3/8”)	1	CWT25005 (3/8”)	←	CWT25007 (1/2”)	
13	DISCHARGE GRILLE COMPLETE	1	CWE20C2062	CWE20C2061	CWE20C2085	
14	VERTICAL VANE WITH TAB	2	CWE24458	←	←	
15	VERTICAL VANE	10	CWE24457	←	←	
16	CONNECTING BAR	2	CWE26194	←	←	
17	AIR SWING MOTOR	1	CWA98260	CWA98C033	←	0
18	LEAD WIRE - AIR SWING MOTOR	1	CWA67C2106	←	←	
19	CAP FOR DRAIN TRAY	1	CWH52C003	←	←	
20	HORIZONTAL VANE	1	CWE241027	←	←	
21	CONTROL BOARD	1	CWH10965	CWH10965	←	
22	POWER SUPPLY CORD	1	CWA20C2102	←	←	
23	ELECTRONIC CONTROLLER	1	CWA742320	CWA742327	CWA742313	0
24	RECEIVER	1	CWA74919	←	←	0
25	INDICATOR COMPLETE	1	CWE39C1024	←	←	0
26	LEAD WIRE - INDICATOR	1	CWA67C2105	←	←	
27	TERMINAL BOARD	1	CWA28C2026	←	CWA28C2025	0
28	INDICATOR HOLDER	1	CWD931018	←	←	
29	SENSOR COMPLETE	1	CWA50C608	←	←	0
30	CONTROL BOARD FRONT COVER	1	CWH13456	←	←	
31	CONTROL BOARD TOP COVER	1	CWH13457	←	←	
32	REMOTE CONTROL COMPLETE	1	CWA75C2081	←	←	0
33	FRONT GRILLE COMPLETE	1	CWE11C2106	←	←	
34	INTAKE GRILLE COMPLETE	1	CWE22C1006	←	←	
35	DECORATION BASE COMPLETE	1	CWE35C1007	←	←	
36	TAB	2	CWD931020	←	←	
37	AIR FILTER	2	CWD00240	←	←	
38	GRILLE DOOR	1	CWE14236	←	←	
39	SCREW FOR FRONT GRILLE	2	XTN4+16C	←	←	
40	CAP FOR FRONT GRILLE	2	CWH52267	←	←	
41	DRAIN HOSE	1	CWH5880580	←	←	
44	INSTALLATION PLATE	1	CWH36157	←	←	
45	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C1054	←	←	
46	AIR PURIFYING FILTER COMPLETE	1	CWD00C1028	←	←	

NO.	DESCRIPTION & NAME	Q'TY	CS-MA75KE	CS-MA95KE	CS-MA125KE	REMARKS
47	AIR PURIFYING FILTER (CATECHIN)	2	CWD001014	←	←	0
48	AIR PURIFYING FILTER (DEODORIZING)	2	CWD001033	←	←	0
49	REMOTE CONTROL HOLDER	1	CWH36161	←	←	

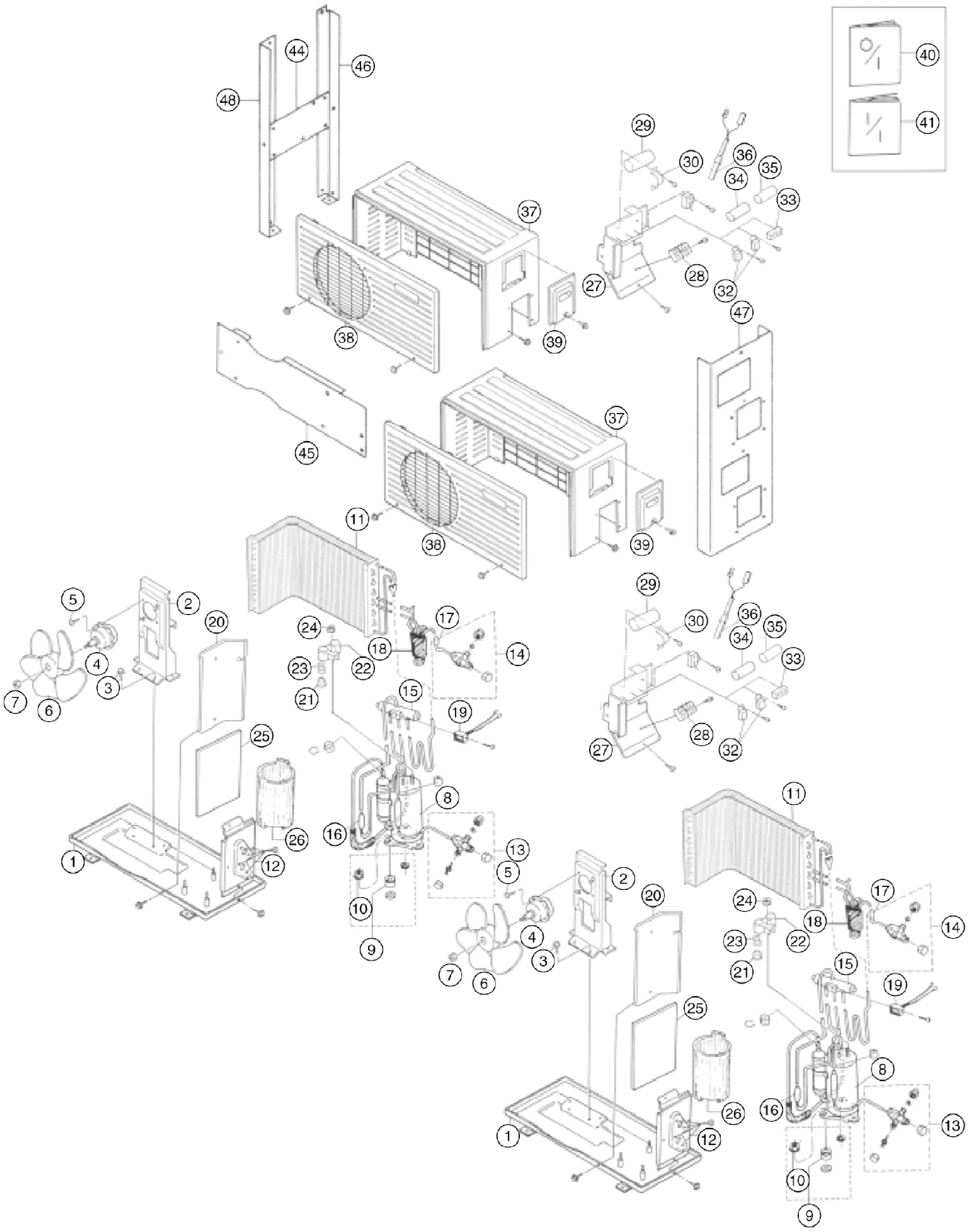
(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086).

- "O" marked parts are recommended to be kept in stock.

17. Exploded View

CU-MA195KE



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Note:

The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

18. Replacement Parts List

<Model: CU-MA125KE>

NO.	DESCRIPTION & NAME	Q'TY	CU-MA125KE			REMARKS
			(Upper)		(Lower)	
1	CHASSY ASS'Y	1	CWD50K627		CWD50K612A	
2	FAN MOTOR BRACKET	1	CWD54113		CWD54155	
3	SCREW - FAN MOTOR BRACKET	8		CWH4580399		
4	FAN MOTOR	2		CWA95245		0
5	SCREW - FAN MOTOR BRACKET	6		CWH55027		0
6	PROPELLER FAN	2		CWH00K052		
7	NUT - PROPELLER FAN	2		CWH56032		
8	COMPRESSOR	1	2RS122D5AB02		2KS224D5AC02	0
9	ANTI - VIBRATION BUSHING	3	CWH50077		CWH50055	
10	NUT - COMPRESSOR MOUNT	3	CWH56000		CWH4582065	
11	CONDENSER	1	CWB32C043		CWB32C225	
12	HOLDER COUPLING ASS'Y	1	CWH35K017A		CWH35K019A	
13	3-WAY VALVE	1	CWB01343		CWB01379	0
14	2-WAY VALVE	1	CWB02224		CWB02269	0
15	4-WAY VALVE	1	CWB00002		CWB00003	0
16	TUBE ASS'Y (RECEIVER)	1	CWT01537		CWT01C240	
17	STRAINER	2		CWB11025		0
18	TUBE ASS'Y (CHECK VALVE, CAPILLARY)	1	CWT01C260		CWA43C241	
19	V - COIL COMPLETE	1	CWA43C424		CWA43C439	0
20	SOUND PROOF BOARD	1	CWH15C081		CWH15264	
21	OVERLOAD PROPECTOR	1	CWA67C1349		CWA67C1212	0
22	TERMINAL COVER	1	CWH17006		CWH17038	
23	HOLDER - O.L.P.	1			CWH34033	
24	NUT - TERMINAL COVER	2		CWH7080300		
25	SOUND PROOF MATERIAL	1			CWG30779	
26	SOUND PROOF MATERIAL	1	CWG302073			
27	CONTROL BOARD	1	CWH10881		CWH10878	
28	TERMINAL BOARD ASS'Y	1	CWA28C500		CWA28C502	
29	CAPACITOR - COMPRESSOR	1	CWA31653		CWA31647	0
30	HOLDER CAPACITOR	2		CWH30057		
31	CAPACITOR - FAN MOTOR (1.2 μF, 400 V)	2		CWA31342		0
32	ELECTROMAGNETIC SWITCH	4		CWA00059		0
33	TERMINAL BOARD ASS'Y	2		CWA4711012		
34	ELECTROLYTIC CAPACITOR	2		CWA32C045		0
35	ELECTROLYTIC CAPACITOR	2		CWA32C067		0
36	TEMPERATURE RELAY	2		CWA14C1001		0
37	CABINET ASS'Y	1	CWE00K332A		CWE00K251A	
38	CABINET FRONT PLATE	1	CWE06C046E		CWE06C108A	
39	CONTROL BOARD COVER	2		CWH13C286		
40	OPERATING INSTRUCTIONS	1		CWF563195		
41	INSTALLATION INSTRUCTIONS	1		CWF612119		
44	FLAT PLATE	1		CWD64188A		
45	FLAT PLATE	1		CWD911088		
46	FLAT PLATE	1		CWD91179A		
47	FLAT PLATE	1		CWD91180A		
48	FLAT PLATE	1		CWD91181A		

(Note)

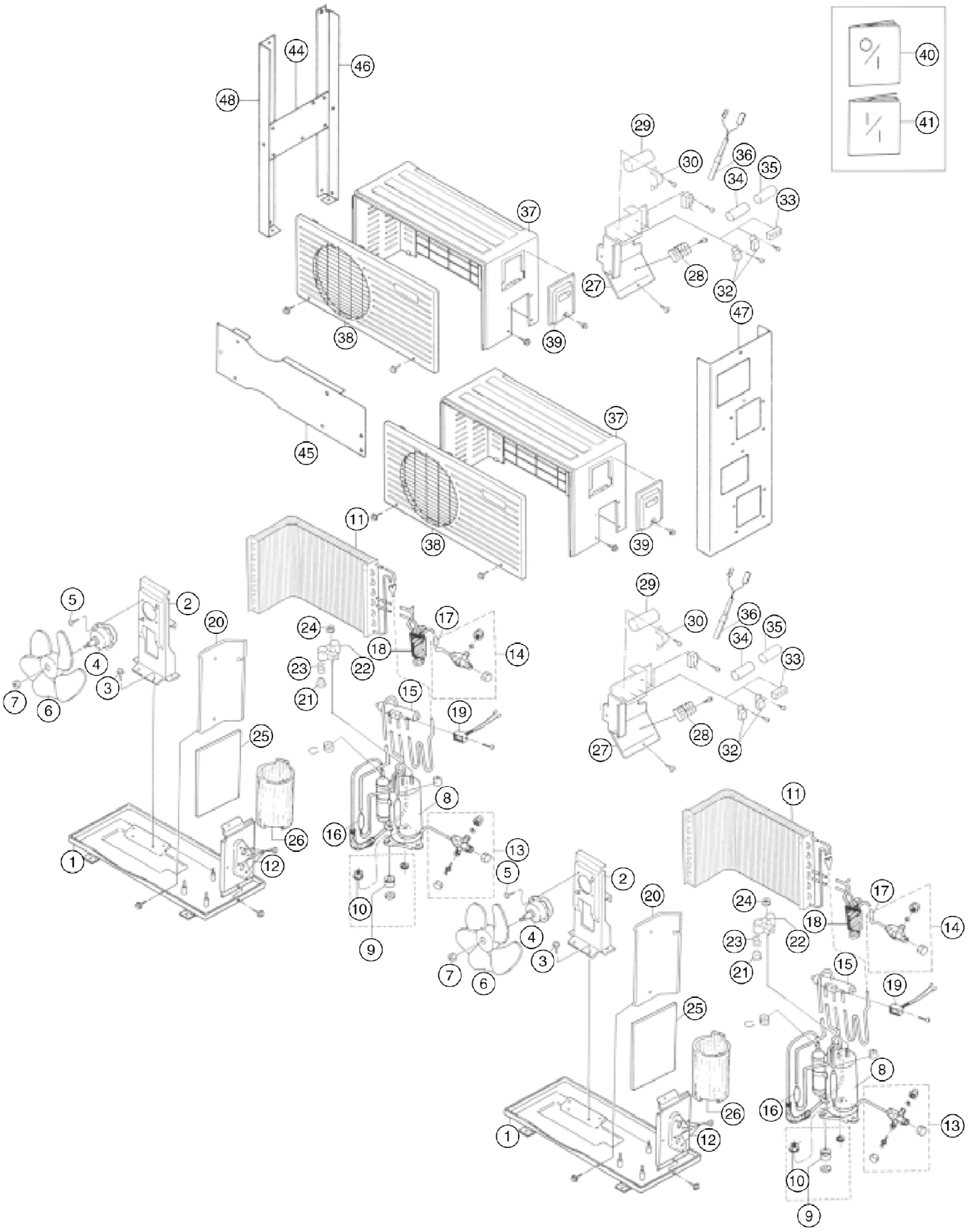
- All parts are supplied from MAICO, Malaysia (Vendor Code: 061).

- The above parts are kept for seven years in accordance with MEI service policy. However, longer lead time will be taken in supplying the non-numbered parts.

- “O” marked parts are recommended to be kept in stock.

19. Exploded View

CU-MA185KE / CU-MA245KE



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Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

20. Replacement Parts List

<Model: CU-MA185KE / CU-MA245KE>

NO.	DESCRIPTION & NAME	Q'TY	CU-MA185KE	CU-MA245KE	REMARKS
1	CHASSY ASS'Y	1	CWD50K562A	CWD50K626A	
2	FAN MOTOR BRACKET	2	CWD54113	CWD54155	
3	SCREW - FAN MOTOR BRACKET	8	CWH4580399	←	
4	FAN MOTOR	2	CWA95245	←	0
5	SCREW - FAN MOTOR MOUNT	6	CWH55027	←	
6	PROPELLER FAN	2	CWH00K052	←	
7	NUT - PROPELLER FAN	2	CWH56032	←	
8	COMPRESSOR	2	2PS164D3AD02	2KS224D5AC02	0
9	ANTI - VIBRATION BUSHING	6	CWH50077	CWH50055	
10	NUT - COMPRESSOR MOUNT	6	CWH56000	CWH4582065	
11	CONDENSER	2	CWB32C043	CWB32C225	
12	HOLDER COUPLING ASS'Y	2	CWH35K017A	CWH35K019A	
13	3-WAY VALVE	2	CWB01343	CWB01379	0
14	2-WAY VALVE	2	CWB02224	CWB02269	0
15	4-WAY VALVE	2	CWB00002	CWB00003	0
16	TUBE ASS'Y (RECEIVER)	2	CWT01537	CWT01C240	
17	STRAINER	2	CWB11025	←	
18	TUBE ASS'Y (CHECK VALVE / CAPILLARY)	2	CWT01C257	CWT01C241	
19	V - COIL COMPLETE	2	CWA43C424	CWA43C439	0
20	SOUND PROOF BOARD	2	CWH15C081	CWH15264	
21	OVERLOAD PROTECTOR	2	CWA67C1210	CWA67C1212	0
22	TERMINAL COVER	2	CWH17038	←	
23	HOLDER - O.L.P.	2	CWH34033	←	
24	NUT - TERMINAL COVER	2	CWH7080300	←	
25	SOUND PROOF MATERIAL	2	—	CWG30779	
26	SOUND PROOF MATERIAL	2	CWG30786	—	
27	CONTROL BOARD	2	CWH10881	CWH10878	
28	TERMINAL BOARD ASS'Y	2	CWA28C501	CWA28C502	
29	CAPACITOR - COMPRESSOR	2	CWA31646	CWA31647	0
30	HOLDER CAPACITOR	2	CWH30057	←	
31	CAPACITOR - FAN MOTOR (1.2 μ F, 400 V)	1, 1	CWA31341, CWA31342	←	0
32	ELECTROMAGNETIC SWITCH	4	CWA00059	←	0
33	TERMINAL BOARD ASS'Y	2	CWA4711012	←	
34	ELECTROLYTIC CAPACITOR	2	CWA32C045	←	0
35	ELECTROLYTIC CAPACITOR	2	CWA32C067	←	0
36	TEMPERATURE RELAY	2	CWA14C1001	←	0
37	CABINET ASS'Y	2	CWE00K332A	CWE00K251A	
38	CABINET FRONT PLATE	1	CWE06C046E	CWE06C104A	
39	CONTROL BOARD COVER	2	CWH13302	CWH13C286	
40	OPERATING INSTRUCTIONS	1	CWF563195	←	
41	INSTALLATION INSTRUCTIONS	1	CWF612120	CWF612119	
42	CHASSY ASSY'Y (LOWER)	1	CWD50K456D	CWD50K612A	
43	CABINET FRONT PLATE	1	CWE06C066A	CWE06C108A	

NO.	DESCRIPTION & NAME	Q'TY	CU-MA185KE	CU-MA245KE	REMARKS
44	FLAT PLATE	1	CWD64188A	CWD64189A	
45	FLAT PLATE	1	CWD90964A	CWD90955A	
46	FLAT PLATE	1	CWD90962A	CWD90964A	
47	FLAT PLATE	1	CWD90973A	CWD90977A	
48	FLAT PLATE	1	CWD90961A	CWD90959A	

(Note)

- All parts are supplied from MAICO, Malaysia (Vendor Code: 061).
- The above parts are kept for seven years in accordance with MEI service policy. However, longer lead time will be taken in supplying the non-numbered parts.
- "O" marked parts are recommended to be kept in stock.

21. Electronic Parts List

<Electronic Controller Part No.: CWA742320, CWA742327, CWA742313>

SYMBOL	DESCRIPTION & NAME	PART NO.
BZ1	SOUND GENERATOR	A48040
CT1	TRANSFORMER	A40322
D1, D4	DIODE	A541SR154-4
D2	DIODE	A54RB501V-40
D3	DIODE	A541SS355T
DB1	DIODE	A54CS1VB20E
FUSE	FUSE	XBA2C20TR0
FUSE HOLDER	FUSE HOLDER	XCSCW032
IC1	INTEGRATED CIRCUIT	A52D0022GB14
IC2	INTEGRATED CIRCUIT	A52BR9020F
IC3	INTEGRATED CIRCUIT	A52A2003GR2
IC4	INTEGRATED CIRCUIT	A52C040
IC5	INTEGRATED CIRCUIT	A52C114
Q1	TRANSISTOR	A55DC114EKTX
Q2, Q3	TRANSISTOR	A55C2412KTX
Q4	TRANSISTOR	A55D1484K
Q5 - Q8	TRANSISTOR	A55DC143XKTX
RY-HOT	ELECTRO MAGNETIC RELAY	A00161
RY-PWR	ELECTRO MAGNETIC RELAY	A001001
RY-SHi, RY-Hi, RY-M	ELECTRO MAGNETIC RELAY	A00160
SSR1, SSR2	TYRISTOR	A56G3MC202PL
SW3	PUSH SWITCH	A01059
T1	TRANSFORMER	A401022
X1	RESONATOR	A45CST4.09MG
ZD1	DIODE	A54D7.5MT1B
ZNR1, ZNR2, ZNR3	DIODE	ERZVEAV511

C-FM	**SH CAPACITOR**	**A31499 (MA95KE), A31698 (MA75KE,MA125KE)**
HOT (RED)	**CURRENT TRANSFORMER**	**A28069T**
CR1, CR2, CR3, CR4, CR5	**SURGE ABSORBER**	**A59014**

Note

- All parts are supplied from MACC, Malaysia (Vendor Code: 086)

22. Electronic Circuit Diagram

Fig. 1

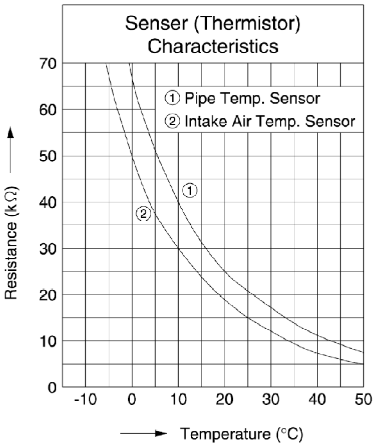


Fig. 2

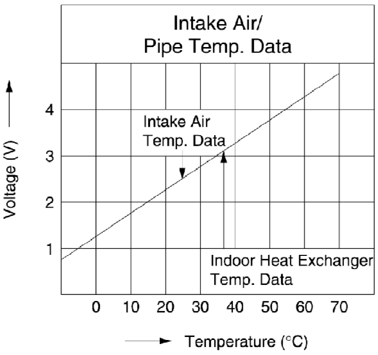
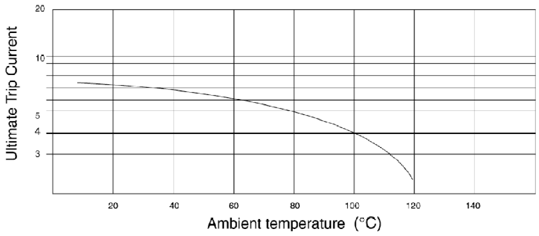
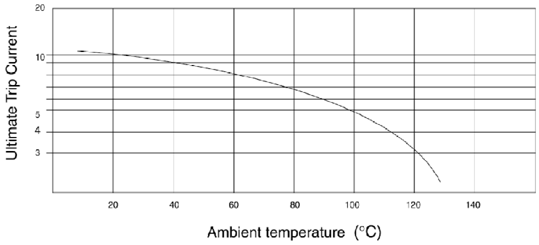


Fig. 3 OLP Characteristics (Compressor)

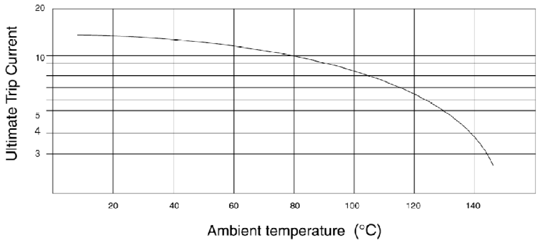
CU-MA195KE (CWA12304)



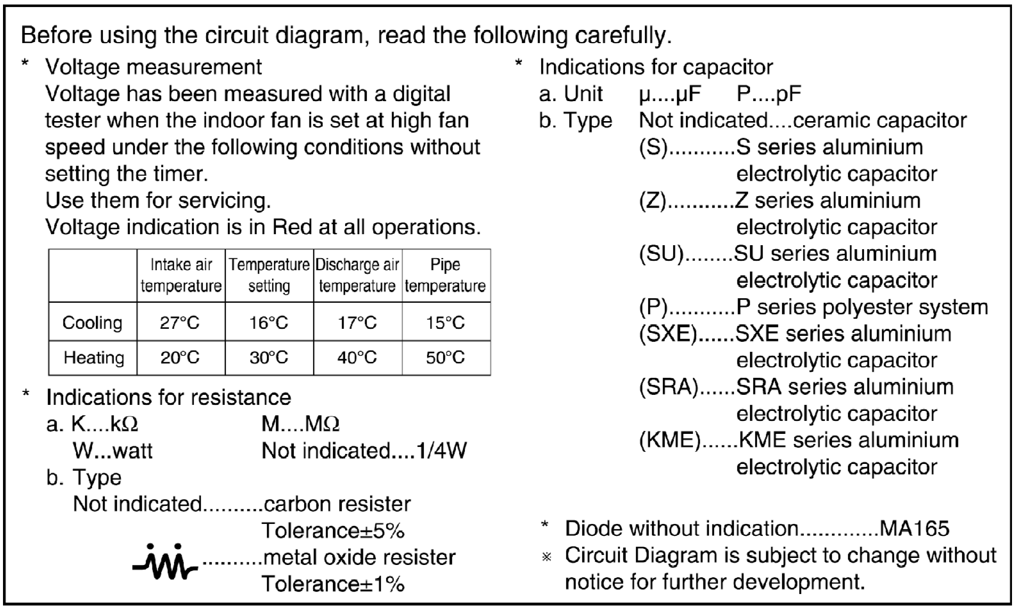
CU-MA185KE (CWA12298)



CU-MA245KE (CWA12300)



How to use electronic circuit diagram



Before using the circuit diagram, read the following carefully.

- Voltage measurement
  Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer.
  Use them for servicing.
  Voltage indication is in Red at all operations.

	Intake air temperature	Temperature setting	Discharge air temperature	Pipe temperature
Cooling	27°C	16°C	17°C	15°C
Heating	20°C	30°C	40°C	50°C

- Indications for resistance
  a. K....kΩ M....MΩ
  W...watt Not indicated....1/4W
  b. Type
  Not indicated..........carbon resister
  Tolerance±5%
  ....metal oxide resister
  Tolerance±1%

- Indications for capacitor
  a. Unit μ....μF P....pF
  b. Type Not indicated....ceramic capacitor
  (S)...........S series aluminium electrolytic capacitor
  (Z)...........Z series aluminium electrolytic capacitor
  (SU)........SU series aluminium electrolytic capacitor
  (P)...........P series polyester system
  (SXE)......SXE series aluminium electrolytic capacitor
  (SRA)......SRA series aluminium electrolytic capacitor
  (KME)......KME series aluminium electrolytic capacitor

- Diode without indication.............MA165

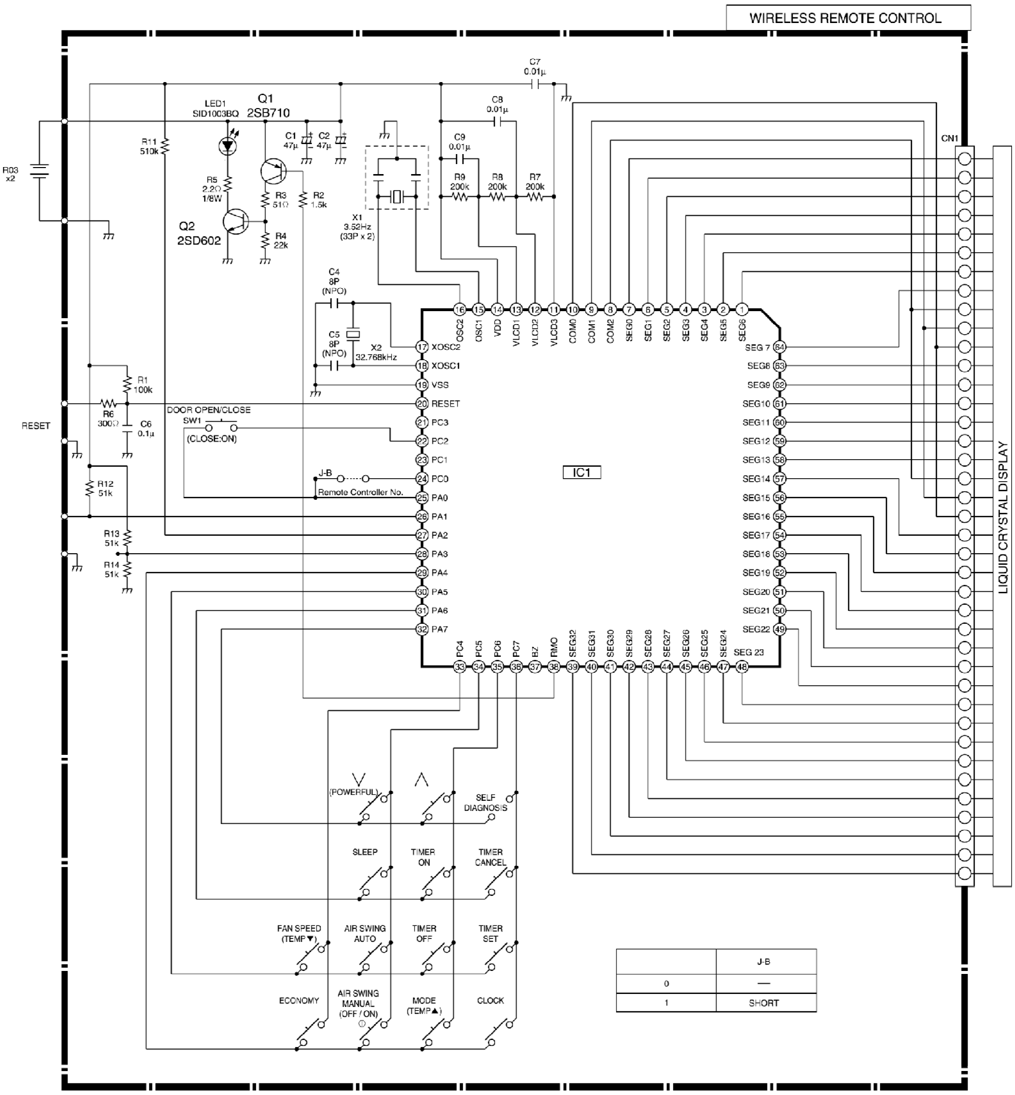
※ Circuit Diagram is subject to change without notice for further development.

TIMER TABLE

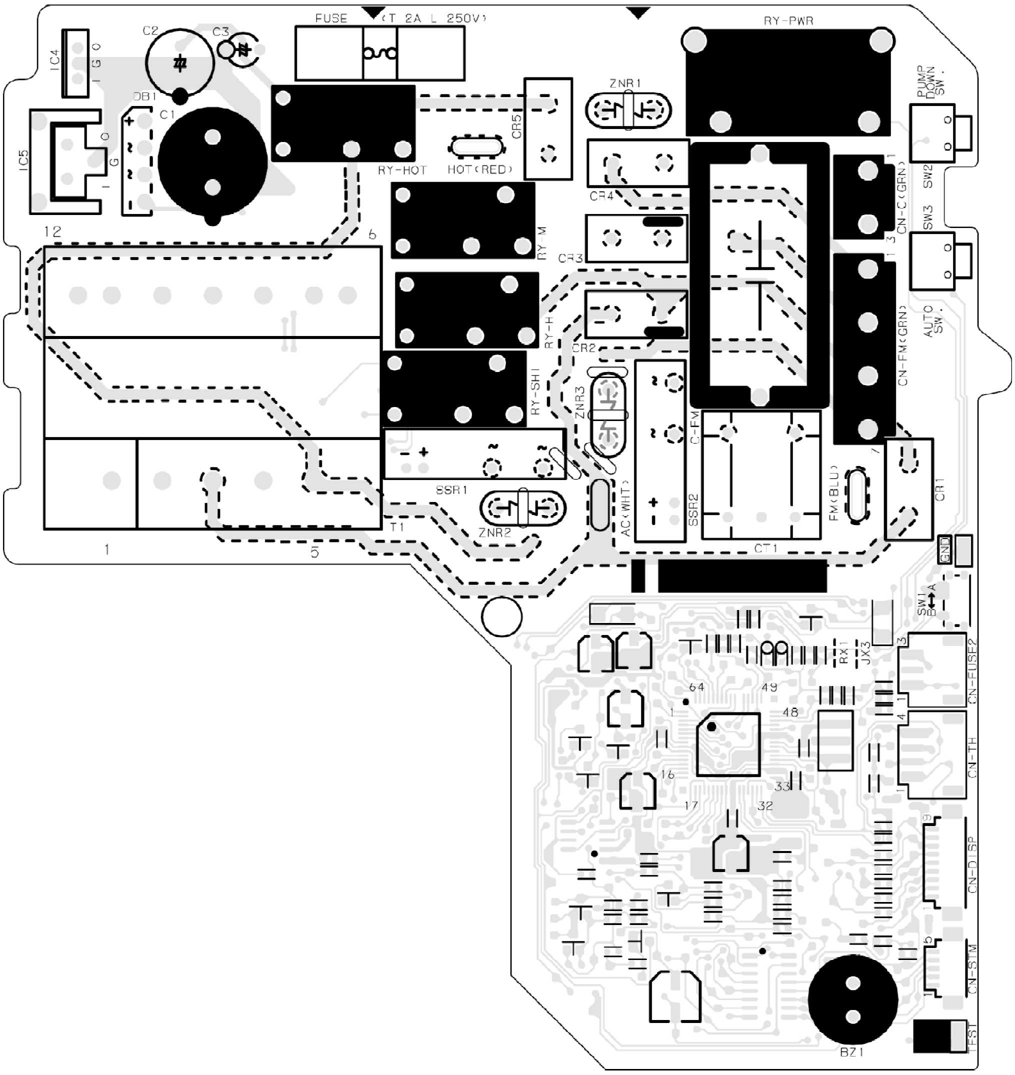
Name		Time	Test mode (When test point Short-circuited)	Remarks
Sleep Mode Waiting		**1 hr.**	**6 sec.**	
Sleep Mode Operation		**8 hrs.**	**48 sec.**	
Real Timer		**1 hr.**	**1 min.**	
		10 min.	**10 sec.**	
		1 min.	**1 sec.**	
Time Delay Safety Control		**2 min. 58 sec.**	**0 sec.**	
Forced Operation		**60 sec.**	**0 sec.**	
Time Save Control (Cooling)		**7 min.**	**42 sec.**	
Anti-Freezing		**4 min.**	**0 sec.**	
Soft Dry	**OFF**	**6 min.**	**36 sec.**	
	ON	**10 min.**	**60 sec.**	**SOFT DRY : 10 min. operation**
Deodorizing Control	**Cooling**	**40 sec.**	**4 sec.**	
		70 sec.	**7 sec.**	
		20 sec.	**2 sec.**	
		180 sec.	**18 sec.**	
	Soft Dry	**40 sec.**	**4 sec.**	
		360 sec.	**36 sec.**	
Comp. Reverse Rotation Detection		**5 min.**	**30 sec.**	**Comp. ON 5 min. and above**
		2 min	**0 sec.**	
Comp./ Fan Motor Delay Timer		**1.6 sec.**	**0 sec.**	
Intake Air Anti-Freezing Prevention		**16 min.**	**96 sec.**	

POWERFUL MODE	**15 min.**	**4.5 sec.**	
Random Auto Restart Control	**0 ~ 150 sec.**	**0 sec.**	
TRS Recovery Detection	**12 min.**	**72 sec.**	
	6 min.	**36 sec.**	
	3 min.	**18 sec.**	
	1 min.	**6 sec.**	
Time Save Control (Heating)	**30 min.**	**3 sec.**	
4 Way Valve Control (Delay)	**5 min.**	**30 sec.**	
Deice Operation Occurs	**60 min.**	**6 sec.**	**60 min. after previous deice**
Deice Ends	**12 min.**	**72 sec.**	

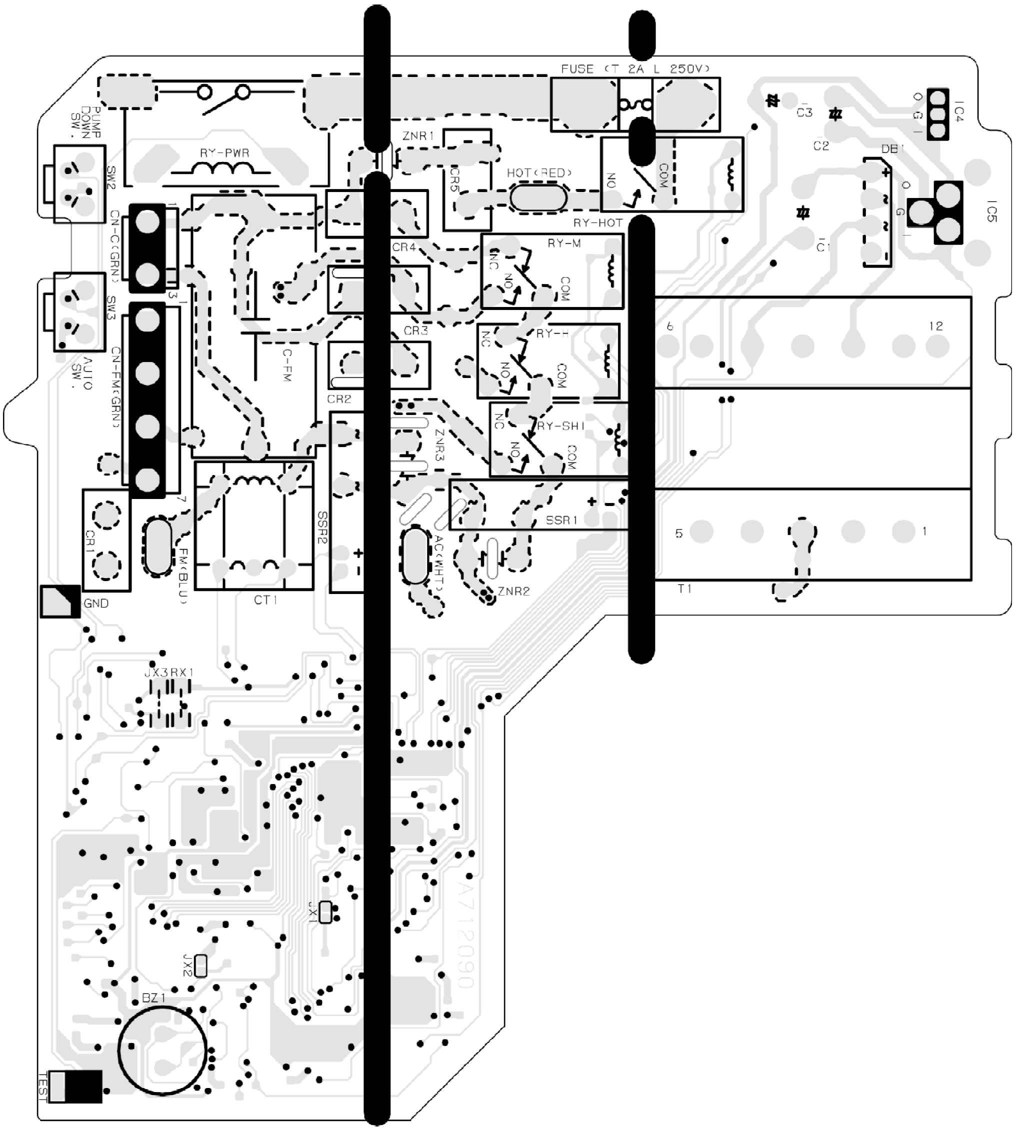
22.1. REMOTE CONTROL


WIRELESS REMOTE CONTROL
C7 0.01µ
C8 0.01µ
C9 0.01µ
LED1 SID1003BQ
Q1 2SB710
C1 47µ
C2 47µ
R11 510k
R03 x2
R5 2.2Ω 1/8W
R3 51Ω
R2 1.5k
R4 22k
Q2 2SD602
X1 3.52Hz (33P x 2)
R9 200k
R8 200k
R7 200k
C4 8P (NPO)
C5 8P (NPO)
X2 32.768kHz
R1 100k
R6 300Ω
C6 0.1µ
RESET
DOOR OPEN/CLOSE
SW1
(CLOSE:ON)
R12 51k
R13 51k
R14 51k
J-B
Remote Controller No.
IC1
CN1
LIQUID CRYSTAL DISPLAY
OSC2
OSC1
VDD
VLCD1
VLCD2
VLCD3
COM0
COM1
COM2
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
XOSC2
XOSC1
VSS
RESET
PC3
PC2
PC1
PC0
PA0
PA1
PA2
PA3
PA4
PA5
PA6
PA7
PC4
PC5
PC6
PC7
BZ
RMO
SEG32
SEG31
SEG30
SEG29
SEG28
SEG27
SEG26
SEG25
SEG24
SEG 23
SEG 7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15
SEG16
SEG17
SEG18
SEG19
SEG20
SEG21
SEG22
(POWERFUL)
SELF DIAGNOSIS
SLEEP
TIMER ON
TIMER CANCEL
FAN SPEED (TEMP▼)
AIR SWING AUTO
TIMER OFF
TIMER SET
ECONOMY
AIR SWING MANUAL (OFF / ON)
MODE (TEMP▲)
CLOCK
J-B
0 —
1 SHORT

22.2. PRINT PATTERN / INDOOR UNIT PRINTED CIRCUIT BOARD / / / TOP VIEW

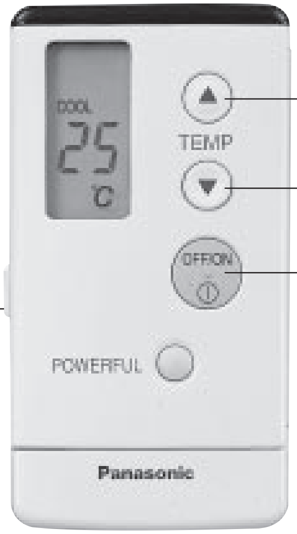

FUSE
(T 2A L 250V)
RY-PWR
IC4
C2
C3
DB1
C1
IC5
RY-HOT
HOT(RED)
CR5
ZNR1
CR4
CR3
CR2
CR1
RY-M
RY-H
RY-SH1
ZNR3
ZNR2
SSR1
SSR2
T1
C-FM
AC(WHT)
CT1
FM(BLU)
CN-C(GRN)
CN-FM(GRN)
PUMP DOWN SW.
SW2
SW3
AUTO SW.
SW1
RX1
JX3
CN-FUSE2
CN-TH
CN-DISP
CN-STM
BZ1
TEST
GND
12
6
1
5
64
49
48
33
32
17
16

22.3. PRINT PATTERN / INDOOR UNIT PRINTED CIRCUIT BOARD / / / BOTTOM VIEW


FUSE (T 2A L 250V)
PUMP DOWN SW.
SW2
RY-PWR
ZNR1
CR5
HOT(RED)
NO
COM
RY-HOT
IC4
C3
C2
DB1
IC5
C1
CN-C(GRN)
CR4
RY-M
NC
SW3
AUTO SW.
CN-FM(GRN)
C-FM
CR3
CR2
RY-H
RY-SHI
6
12
ZNR3
SSR2
SSR1
CT1
AC(WHT)
ZNR2
FM(BLU)
CR1
GND
5
1
T1
JX3
RX1
JX1
JX2
BZ1
TEST
A712090

[MACC] Printed in Malaysia /

Remote Control



Self illuminating button

OFF / ON ⏻

Operation OFF / ON

MODE

Operation Mode Selection

AUTO	Automatic Operation Mode
COOL	Cooling Operation Mode
DRY	Soft Dry Operation Mode
FAN	Air Circulation Mode

FAN SPEED

Indoor Fan Speed Selection

✇ ✇ ✇ █	Low Speed
✇ ✇ ✇ ███	Medium Speed
✇ ✇ ✇ █████	High Speed
AUTOFAN	Automatic Fan Speed

AIR SWING

Airflow Direction Control

AUTO	Automatic Airflow Direction Control
MANUAL	Airflow Direction Manual Control

POWERFUL

Powerful Mode Operation OFF/ON

ECONOMY

Economy Mode Operation OFF/ON

TEMP.

Room Temperature Setting

- Temperature Setting (16°C to 30°C)
- Automatic Operation

▲ HI AUTO	2°C higher than standard
AUTO	Standard
AUTO ▼ Lo	2°C lower than standard

ON-TIMER
OFF-TIMER

Timer Operation Selection

- 24-hour, OFF / ON Real Timer Setting.

TIMER

Time / Timer Setting

- Hours and minutes setting.

SET
CANCEL

Timer Operation Set / Cancel

- ON Timer and OFF Timer setting and cancellation.

CLOCK

Clock Setting

- Current time setting.

SLEEP

Sleep Mode Operation OFF / ON

Indoor Unit

AUTO
OFF / ON

Automatic Operation Button

- Press for < 5s to operate Automatic operation mode.
  (Used when the remote control cannot be used.)
- Press continuously for 5s or < 10s to operate Test Run/Pump down. “Beep” sound will be heard at the 5th second. (Used when test running or servicing.)
- Press continuously for 10s and above to omit or resume the remote control signal receiving sound. “Beep, beep” sound will be heard at the 10th second.

Operation Indication Lamps (LED)

POWER (Green)	Lights up in operation, blinks in Automatic Operation Mode judging.
SLEEP (Orange)	Lights up in Sleep Mode Operation.
TIMER (Orange)	Lights up in Timer Setting.
POWERFUL (Orange) ..	Lights up in Powerful Mode Operation.
ECONOMY (Green)	Lights up in Economy Mode Operation.

Operation Mode

- Cooling, Soft Dry, Air Circulation and Automatic Mode.

Powerful Operation

- Reaches the desired room temperature quickly.

Economy Operation

- To reduce electrical power consumption.

Random Auto Restart Control

- Operation is restarted randomly after power failure at previous setting mode.

Anti-Freezing Control

- Anti-Freezing control for indoor heat exchanger. (Cooling and Soft Dry)

Sleep Mode Auto Control

- Indoor Fan operates at Low speed.
- Operation stops after 8 hours.

Indoor Fan Speed Control

- High, Medium and Low.
- Automatic Fan Speed Mode
  - Cooling : Fan rotates at Hi and Me speed. Deodorizing control is available.
  - Soft Dry: Fan rotates at Lo speed. Deodorizing control is available.

Airflow Direction Control

- Automatic air swing and manual adjusted by remote control for vertical airflow.
- Manually adjusted by hand for horizontal airflow.

Starting Current Control

Time Delay Safety Control

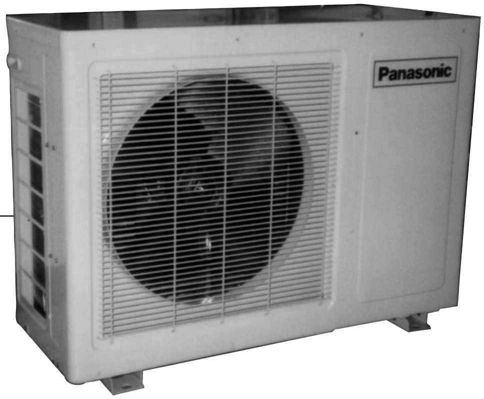
- Restarting is inhibited for appro. 3 minutes.

7 Minutes Time Save Control

- Cooling Operation only.

Outdoor Unit

CU-MC145KE / CU-MC185KE / CU-MC196KE / CU-3MC205KE



CU-MC245KE

Compressor Reverse Rotation Protection Control

- To protect compressor from reverse rotation when there is a instantaneous power failure.

Overload Protector

- 2-Stage OLP to protect the compressor. Overload Protector will trip when
  - Temperature of compressor increases to 120°C.
  - High temperature or high current flows to compressor. (Refer circuit diagram for OLP characteristic)

60 Secs. Forced Operation Control

- Once the compressor is activated, it does not stop within the first 60 secs. However, it stops immediately with remote control stop signal.

Outdoor Fan Operation Control

- Inner protector.

SAFETY PRECAUTIONS

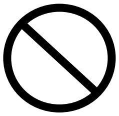
Before operating, please read the following “Safety Precautions” carefully.

To prevent personal injury, injury to others and property damage, the following instructions must be followed.

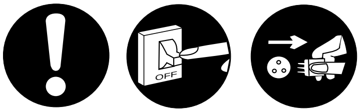
- Incorrect operation due to failure to follow instructions will cause harm or damage, the seriousness of which is classified as follows :

⚠ **Warning**	⚠ **Caution**
This sign warns of death or serious injury.	This sign warns of damage to property.

- The instructions to be followed are classified by the following symbols :



This symbol (with a white background) denotes an action that is PROHIBITED.



These symbols (with a black background) denote actions that are COMPULSORY.

● Installation Precautions

⚠ Warning

- **Do not install, remove and reinstall the unit yourself.**
  Improper installation will cause leakage, electric shock or fire. Please consult an authorized dealer or specialist for the installation work.

⚠ Caution

- **This room air conditioner must be earthed.**
  ❗ Improper grounding could cause electric shock.
- **Do not install the unit in a place where there may be explosive gas leaks.**
  🛇 Gas leaks near the unit could cause fires.
- **Ensure that the drainage piping is connected properly.**
  ❗ Otherwise, water will leak out.

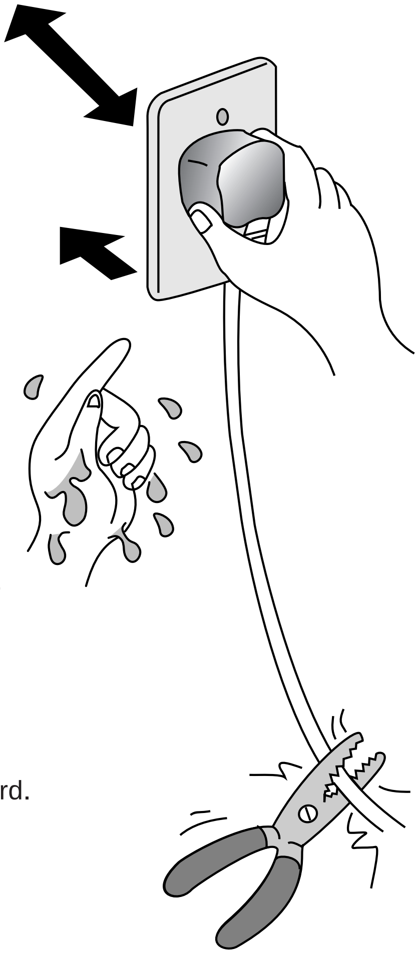
● Operation Precautions

⚠ Warning

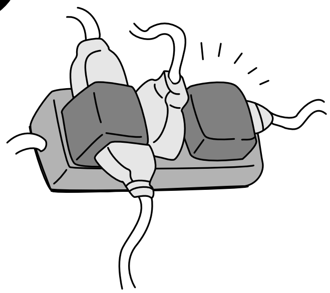
This sign warns of death or serious injury.

Do not insert plug to operate the unit.
Do not pull out plug to stop the unit.

Plug in properly.



Do not share outlet.

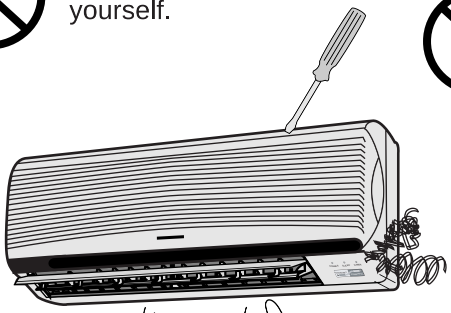


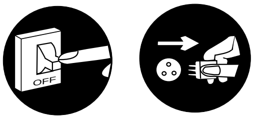
Do not operate with wet hands.

Use specified power cord.

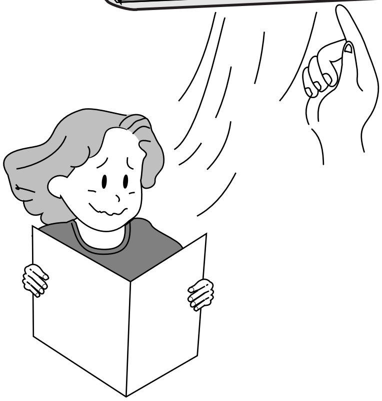
Do not repair by yourself.

Do not damage or modify the power cord.

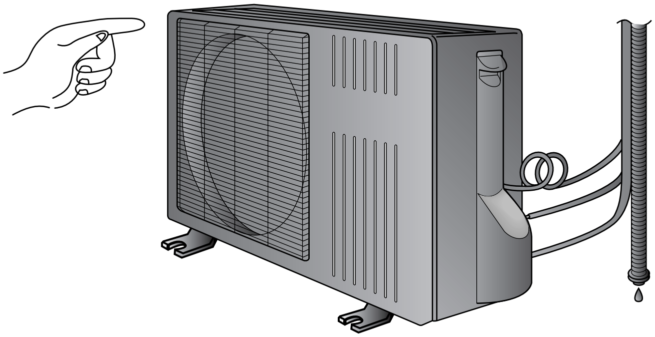




If abnormal condition (burnt smell, etc) occurs, switch off and unplug the power supply.



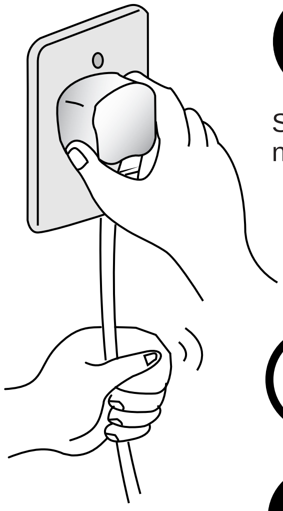
Do not insert finger or other objects into the indoor or outdoor units.



Do not exposed directly to cool air for a long period.

⚠ Caution

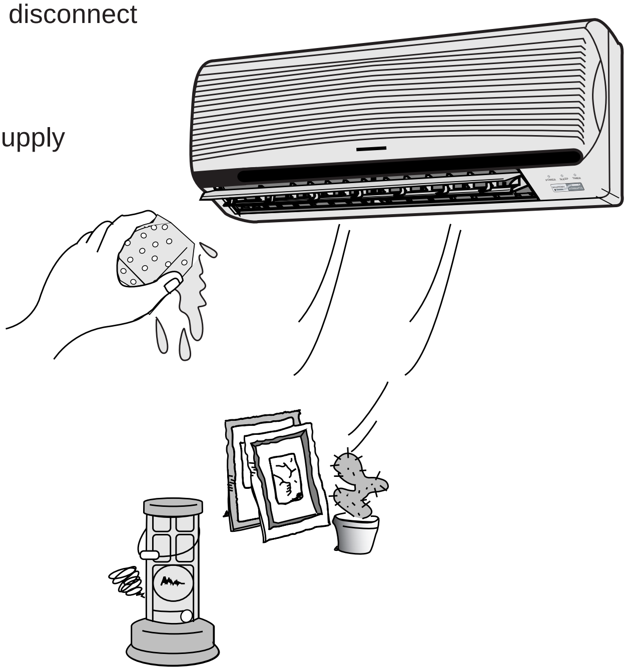
This sign warns of injury.



Switch off the power supply if the unit is not used for a long period.

Do not pull the cord to disconnect the plug.

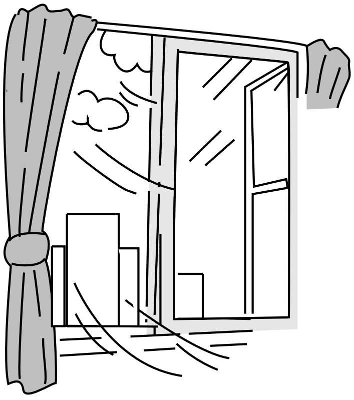
Switch off the power supply before cleaning it.



Do not wash the unit with water.

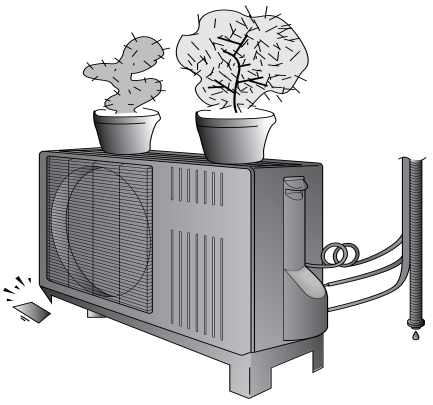
Do not use for other purpose such as preservation or etc.

Do not use any combustible equipment at airflow direction.



Ventilate the room regularly.

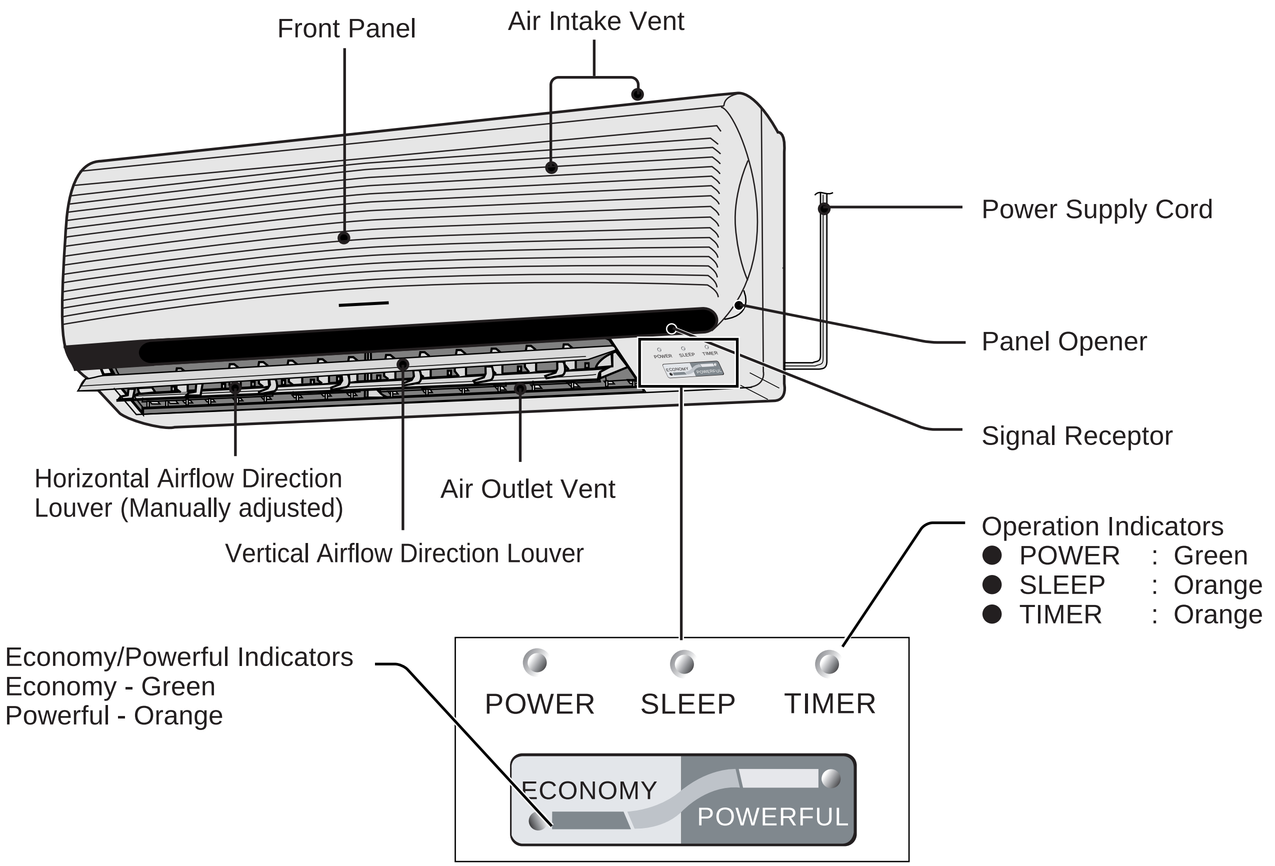
Do not sit or place anything on the outdoor unit.



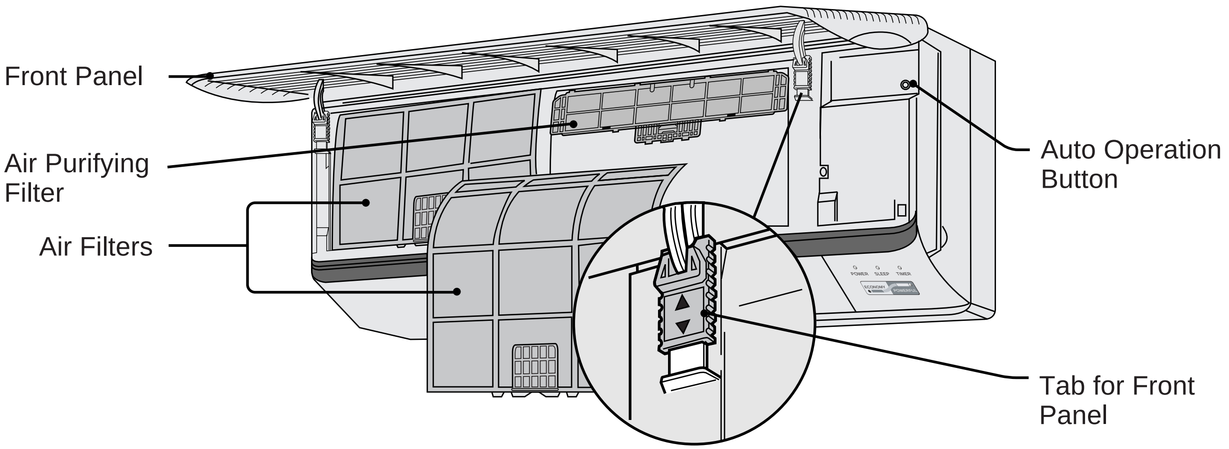
Pay attention as to whether the installation rack is damaged due to long period of usage.

NAME OF EACH PART

● Indoor Unit

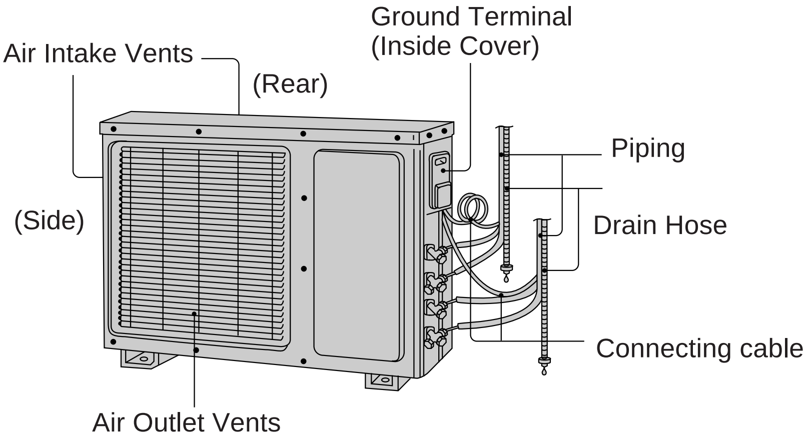

Front Panel
Air Intake Vent
Power Supply Cord
Panel Opener
Signal Receptor
Horizontal Airflow Direction Louver (Manually adjusted)
Air Outlet Vent
Vertical Airflow Direction Louver
Operation Indicators
● POWER : Green
● SLEEP : Orange
● TIMER : Orange
Economy/Powerful Indicators
Economy - Green
Powerful - Orange
POWER
SLEEP
TIMER
ECONOMY
POWERFUL

■ When the front panel is opened

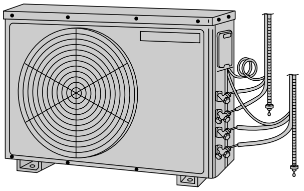

Front Panel
Air Purifying Filter
Air Filters
Auto Operation Button
Tab for Front Panel

Outdoor Unit

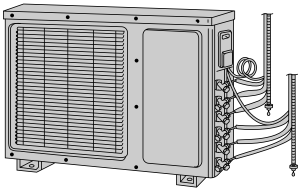
CU-MC185KE
CU-MC196KE


Ground Terminal
(Inside Cover)
Air Intake Vents
(Rear)
Piping
(Side)
Drain Hose
Connecting cable
Air Outlet Vents

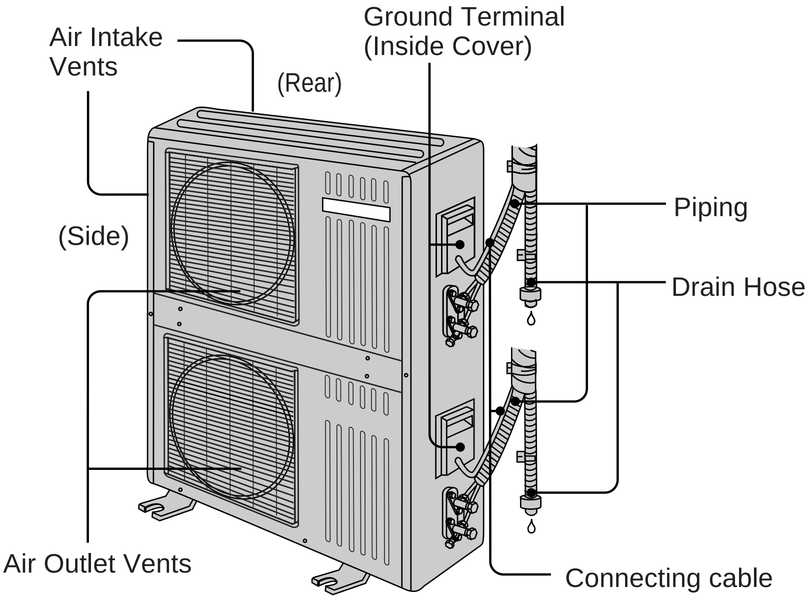
CU-MC145KE



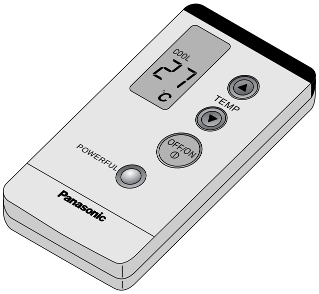
CU-3MC205KE



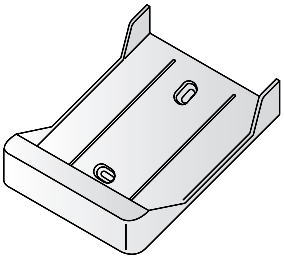
CU-MC245KE


Ground Terminal
(Inside Cover)
Air Intake
Vents
(Rear)
Piping
(Side)
Drain Hose
Air Outlet Vents
Connecting cable

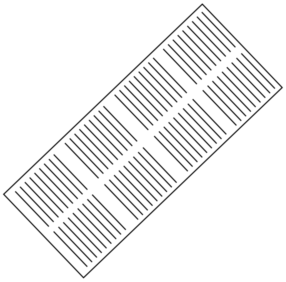
Accessories


COOL
27
C
TEMP
OFF/ON
POWERFUL
Panasonic

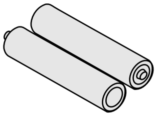
Remote Control



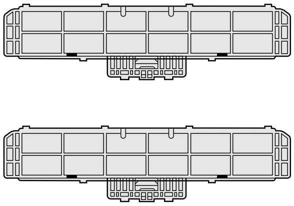
Remote Control Holder



Remote Control Indication Sticker

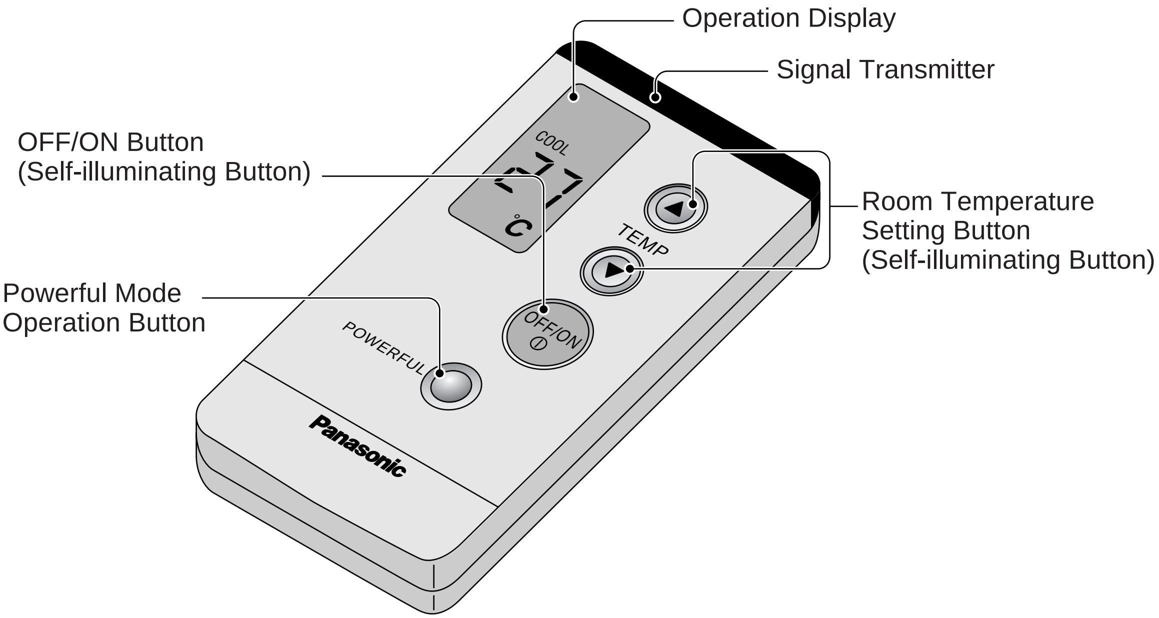


Two RO3 dry-cell batteries or equivalent

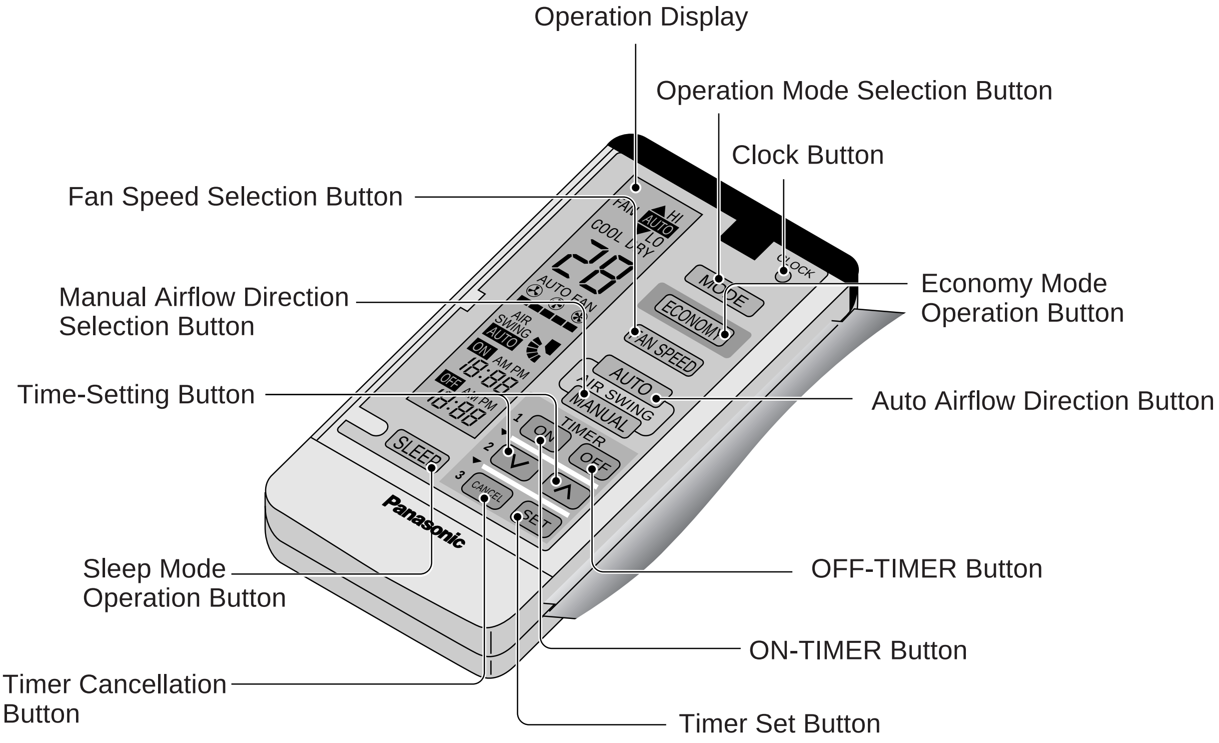


Air Purifying Filters
(Catechin Air Purifying Filters and Deodorizing Filters)

● Remote Control


Operation Display
Signal Transmitter
OFF/ON Button
(Self-illuminating Button)
Room Temperature
Setting Button
(Self-illuminating Button)
Powerful Mode
Operation Button
COOL
TEMP
OFF/ON
POWERFUL
Panasonic

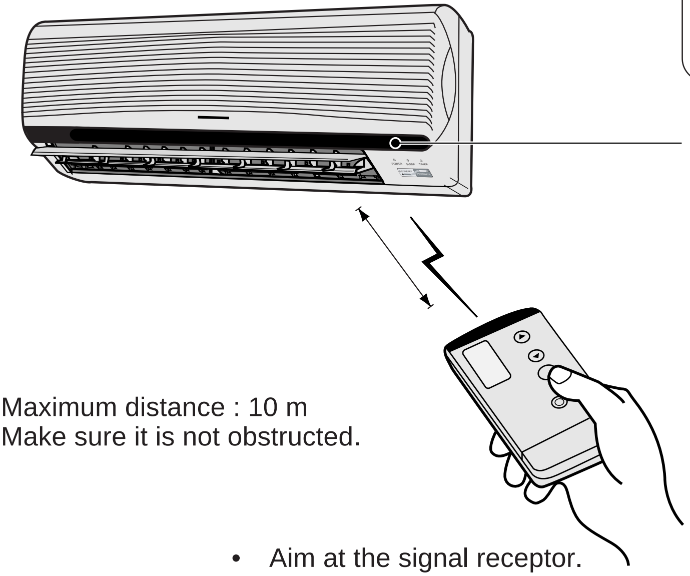
■ When the remote control cover is opened


Operation Display
Operation Mode Selection Button
Clock Button
Fan Speed Selection Button
Economy Mode
Operation Button
Manual Airflow Direction
Selection Button
Time-Setting Button
Auto Airflow Direction Button
Sleep Mode
Operation Button
OFF-TIMER Button
ON-TIMER Button
Timer Cancellation
Button
Timer Set Button
MODE
CLOCK
ECONOMY
FAN SPEED
AUTO
AIR SWING
MANUAL
TIMER
ON
OFF
SLEEP
CANCEL
SET
Panasonic

■ How to use the remote control

Notes

- Do not throw or drop
- Do not get it wet
- Certain type of flourescent lamps may affect signal reception. Consult your dealer.



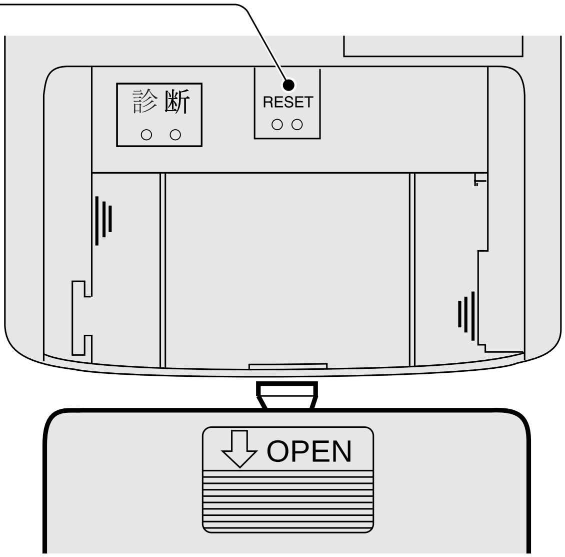
Signal receptor
- Signal received sound.
  One short beep or one long beep.

- Maximum distance : 10 m
- Make sure it is not obstructed.

- Aim at the signal receptor.

■ When the back cover is opened

Reset points
- short to clear the memory

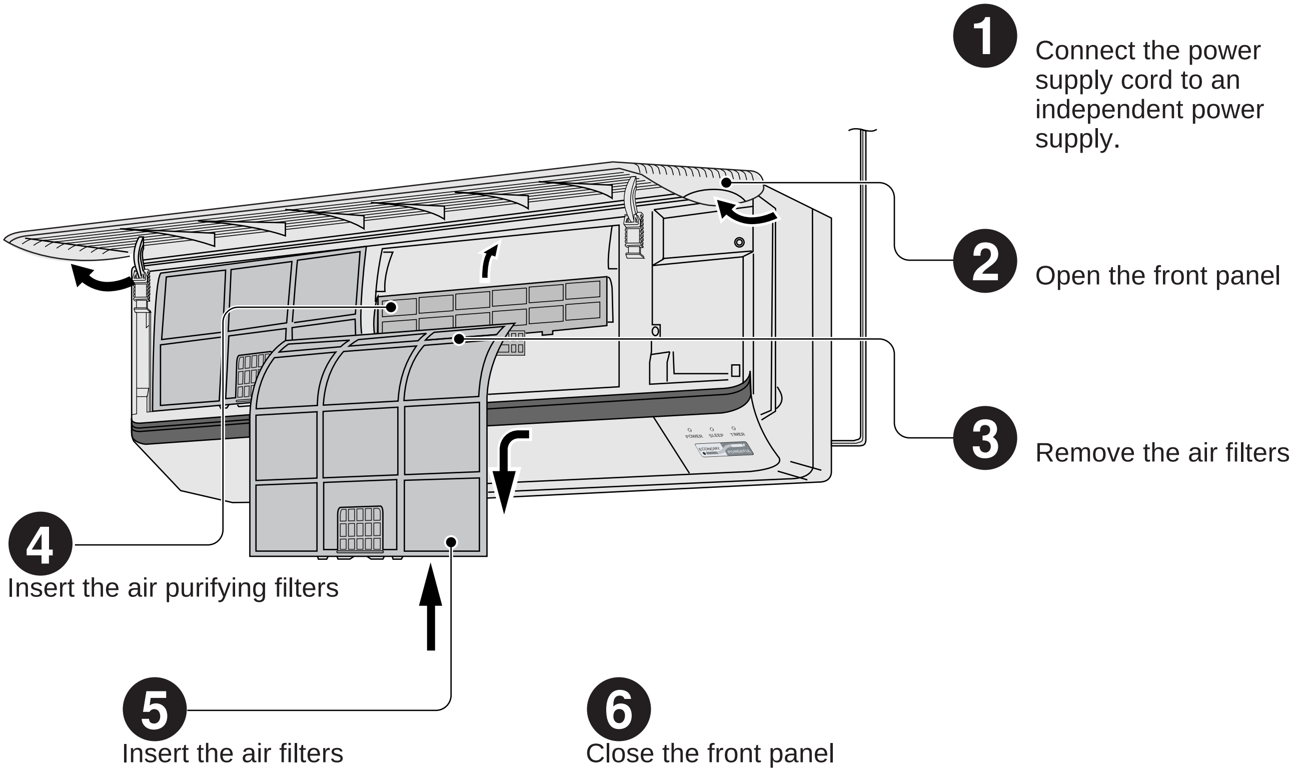


PREPARATION BEFORE OPERATION

● Indoor Unit

⚠ Warning

- ■ **Ensure the power plug is securely inserted.**
  A loose plug may cause a fire or an electric shock.



1 Connect the power supply cord to an independent power supply.

2 Open the front panel

3 Remove the air filters

4 Insert the air purifying filters

5 Insert the air filters

6 Close the front panel

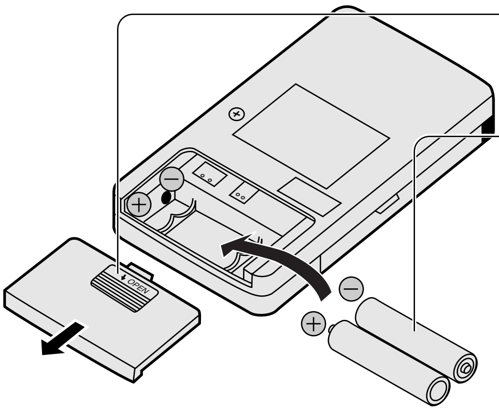
■ Notes

- If the unit is not going to be used for an extended period of time, turn off the main Power supply. If it is left at the ON position, approximately 2.5 W of electricity will be used even if the indoor unit has been turned off with the remote control.
- If operation is stopped, then restart immediately, the unit will resume operation only after 3 minutes.

Use under the following conditions				(Unit in °C)
DBT: Dry Bulb Temp	Indoor		Outdoor	
WBT: Wet Bulb Temp	DBT	WBT	DBT	WBT
Maximum Temperature	32	23	43	26
Minimum Temperature	16	11	16	11

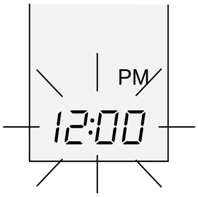
● Remote Control

■ Inserting batteries



1 OPEN **Slide the cover to open**

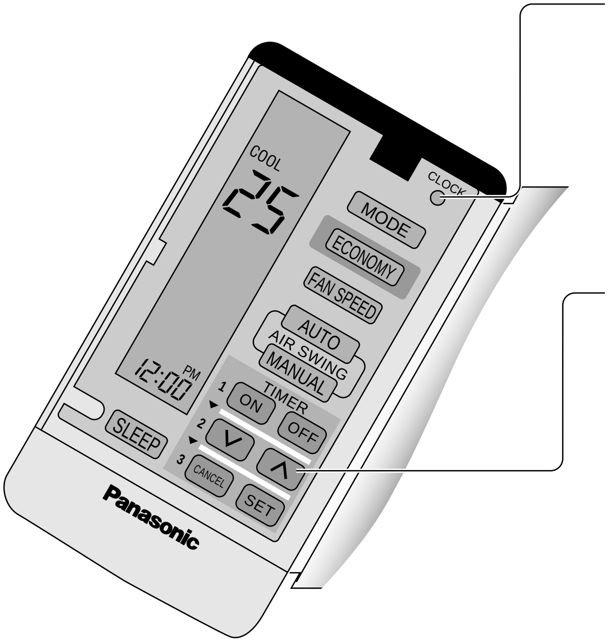
2 ⊕ ⊖ **Be sure the directions are correct**



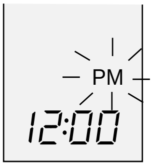
- Open the remote control cover and confirm the display 12:00 PM is flashing.

※ Set the current time (Clock) immediately to prevent battery exhaustion.

■ Setting the clock


CLOCK
COOL
25
MODE
ECONOMY
FAN SPEED
AUTO
AIR SWING
MANUAL
TIMER
1
ON
OFF
2
3
CANCEL
SET
SLEEP
PM
12:00
Panasonic

1 **Press the clock button**



← flashes

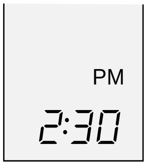
← lights up

2 **Press to set the current time**

∧ Press continuously for fast forwarding.

∨ Press continuously for fast reversing.

3 **Press the clock button**



← lights up

← lights up

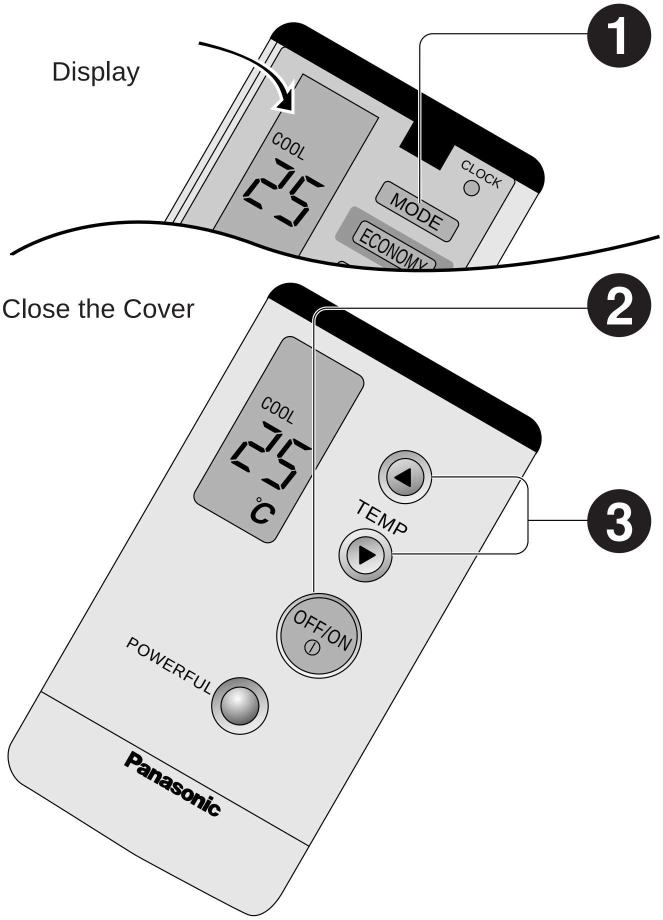
■ About the batteries

- Can be used for approximately one year.

Observe the following when replacing the batteries
- Replace with new batteries of the same type .
- Do not use rechargeable batteries (Ni-Cd).
- Remove the batteries if the unit is not going to be used for a long period.

HOW TO OPERATE

● Automatic, Cooling, Soft Dry, Fan


Display
COOL
25
MODE
CLOCK
ECONOMY
Close the Cover
1
2
3
COOL
25
°C
TEMP
OFF/ON
POWERFUL
Panasonic

1 Press to select the desired operation mode
When pressed, the display changes in this order.

COOL ➡ DRY ➡ FAN ➡ AUTO

2 Press to start the operation
POWER indicator LED (Green) on indoor unit will light up.
Press once more to stop operation.

3 Press to select room temperature

- **AUTO Automatic Operation**

Display

▲HI AUTO	Operation with 2°C higher than standard temperature.
AUTO	Operation with standard temperature.
AUTO ▼LO	Operation with 2°C lower than standard temperature.

- **COOL Cooling, DRY Soft Dry operation**

▲	Press to increase temperature by 1°C.
▼	Press to decrease temperature by 1°C.

– The temperature can be set between 16°C and 30°C.
– Recommended temperature
For Cooling: 26°C - 28°C.
For Soft Dry: 1°C - 2°C lower than room temperature.

TEMPERATURE 23°C

Operation	Standard temperature
COOLING	25°C
SOFT DRY	22°C

■ Operation details

COOL Cooling Operation

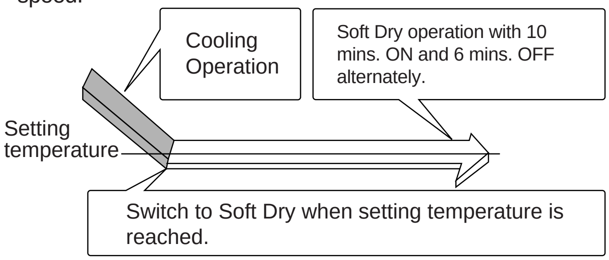
- To set room temperature to your preference of cooling comfort.

AUTO – Automatic Operation

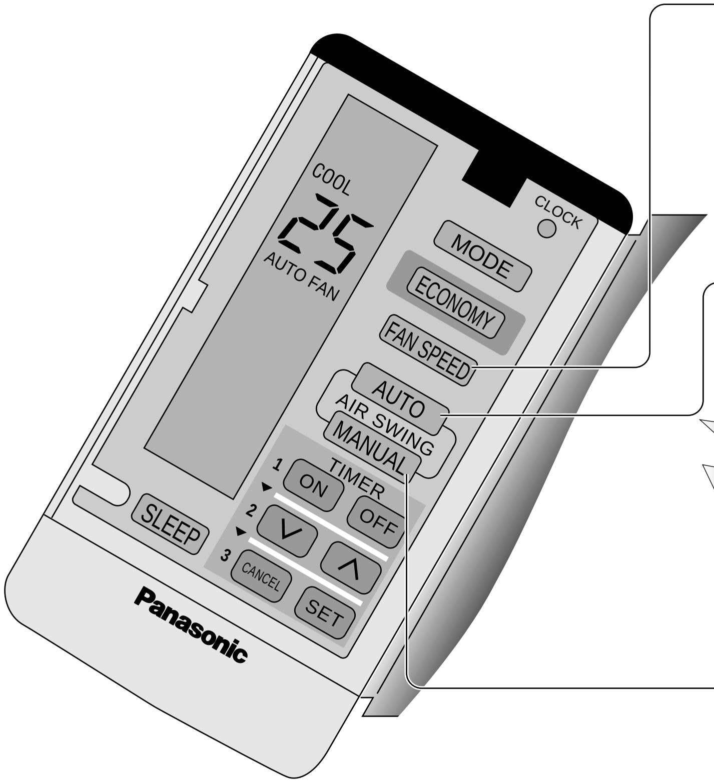
- Once the Automatic Operation is selected, the indoor temperature sensor operates automatically to select the desired operation mode with Cooling or Soft Dry.
- After the operation mode have been selected, the mode does not change.
- Temperature is not displayed on remote control during Auto mode operation.

DRY – Soft Dry Operation

- A very gentle Cooling Operation. Consisting primarily of dehumidifying. It does not lower the room temperature.
- During Soft Dry operation, the indoor fan operates at Low fan speed.

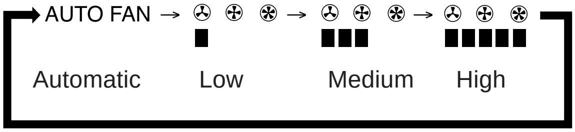

Cooling Operation
Soft Dry operation with 10 mins. ON and 6 mins. OFF alternately.
Setting temperature
Switch to Soft Dry when setting temperature is reached.

● Adjusting Airflow Direction And Fan Speed


COOL
25
AUTO FAN
CLOCK
MODE
ECONOMY
FAN SPEED
AUTO
AIR SWING
MANUAL
TIMER
1
ON
OFF
2
3
CANCEL
SET
SLEEP
Panasonic

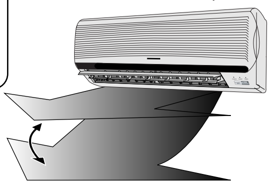
Press to select Fan speed

- The display changes in this order


AUTO FAN
Automatic
Low
Medium
High

Selecting Vertical Airflow Direction

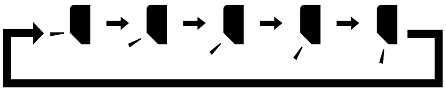
Press AUTO,

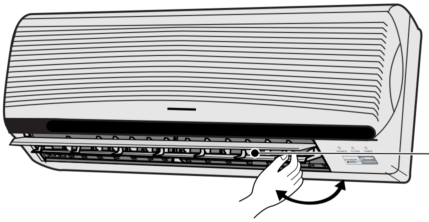


- The louver swing up and down automatically.
- To stop this operation, press (MANUAL) button.

Press MANUAL

- Manual selection of Vertical Airflow Direction Louver.
- The display changes in this order.





Horizontal Airflow Direction

- Adjust it manually.

■ Operation details

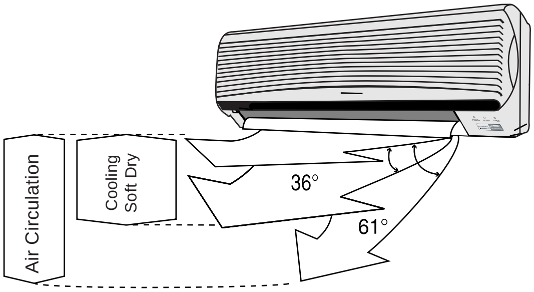
FAN **– Air Circulation Operation**

- When the room temperature reaches the setting temperature, operation commences at Low airflow volume. It stops when the room temperature drops to 2°C below the setting temperature. (It is useful when using a heater).

Automatic Airflow Volume

- The speed of the Indoor fan is adjusted automatically according to the operation. The Indoor fan stops occasionally during cooling operation.

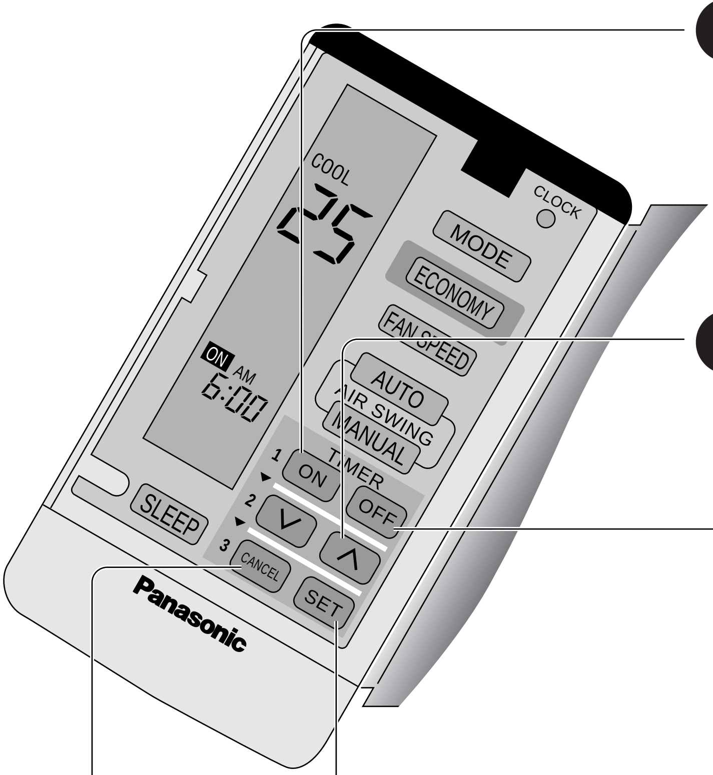
Louver adjustment range


Air Circulation
Cooling
Soft Dry
36°
61°

※ Five stages of adjustments can be made in this range.

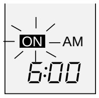
SETTING THE TIMER

Ensure that the current time is correct before setting the timer. The timer cannot be set if the time display is flashing.


COOL
25
CLOCK
MODE
ECONOMY
FAN SPEED
AUTO
AIR SWING
MANUAL
ON AM
6:00
TIMER
1
ON
OFF
2
3
CANCEL
SET
SLEEP
Panasonic

① **Press ON-TIMER**

Flashes →



Set the ON-TIMER to 7:00AM

② **Press to set the time**

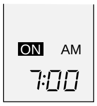
∧ Increase by 10 minutes

∨ Decrease by 10 minutes

※ Press continuously for quick setting.

③ **Press SET**

Lights up →



※ The timer indicator (orange) on the indoor unit will light up.

④ **To set the OFF-TIMER**
Press the OFF-TIMER then follow steps 2 and 3 as above.

- **Timer Cancellation Button**
  (To cancel the Timer)
  Press the ON-TIMER or OFF-TIMER then press CANCEL.
  ※ The timer indicator on the indoor unit will go off.
- **To change the setting time, follow the above steps.**

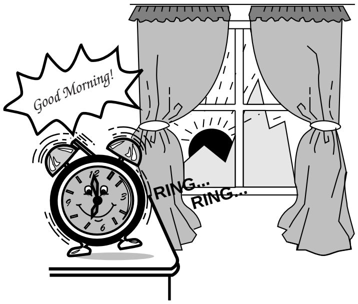
Timer details

- When the ON-Timer is set, operation will start before the actual set time. This is to allow the room temperature to reach the setting temperature by the setting time (maximum of 15 minutes in advance).
- Once the ON-Timer is set, operation will start at the setting time everyday.

● Recommended Setting of Timer

■ **When you sleep**

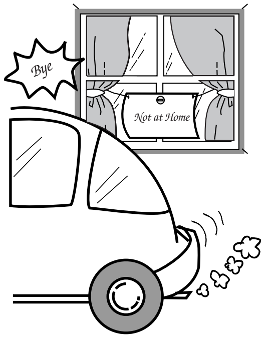
- Set the time at which you will go to sleep with the OFF-TIMER. This prevent wastage of electricity.


Good Morning!
RING...
RING...

■ **When you wake up**

- Set the time at which you will wake up with the ON-TIMER. You can start the new day at a comfortable temperature.

Note:
(The above is an example of how you can used the OFF-TIMER and ON-TIMER mode. However it is recommended to use the sleep mode function for sleeping)



■ **When going out**

- Set the time at which you will go out with the OFF-TIMER. Set the time at which you will come back with the ON-TIMER.
- This will prevent the air conditioner from being left on while you are out, and the temperature will be pleasant when you return.

■ **When you return**

- Set the time at which you will return with the ON-TIMER.
- This will make the temperature pleasant when you return, and it will prevent the air conditioner from being left on.

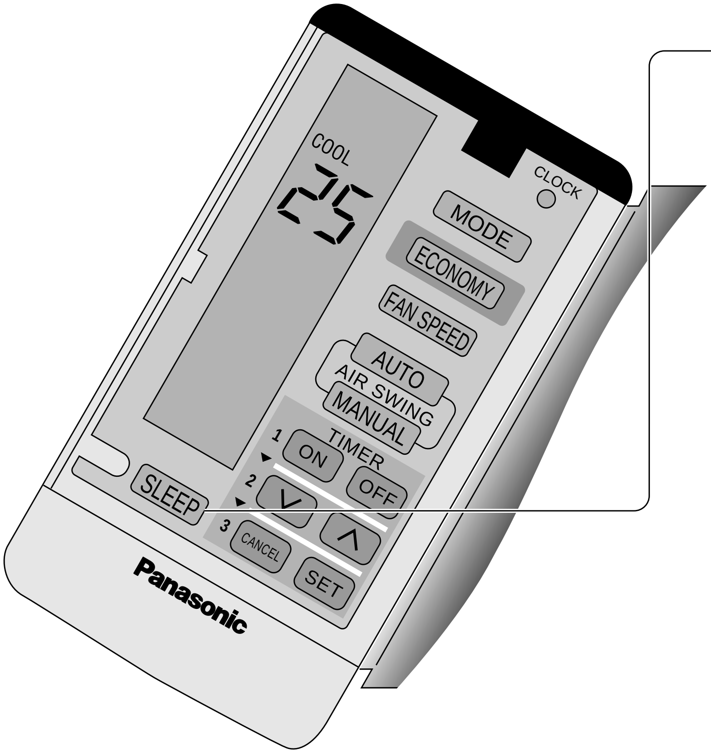
Timer details

- The current time is not displayed when the timers are set.
- When both timers are used together, the TIMER LED on the indoor unit remains lit even if the operation is stopped by the OFF-TIMER.

CONVENIENCE OPERATION

● Sleep Mode

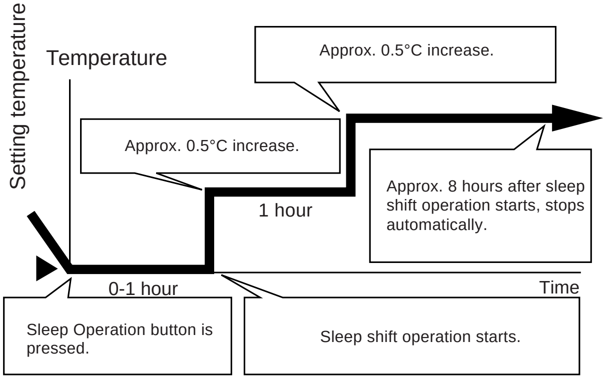
This is to obtain a comfortable room temperature while sleeping.


COOL
25
CLOCK
MODE
ECONOMY
FAN SPEED
AUTO
AIR SWING
MANUAL
TIMER
1
ON
OFF
2
3
CANCEL
SET
SLEEP
Panasonic

- ■ **To set the sleep mode, press SLEEP.**
  ※ The sleep indicator on the indoor unit will light up.
- ■ **To cancel the sleep mode, press once more.**

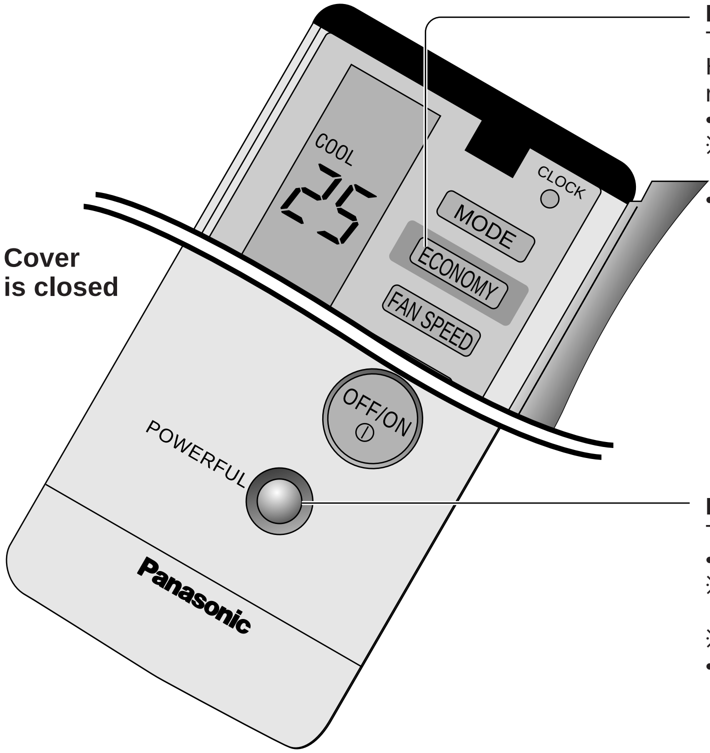
■ Operation details

- When the room temperature reaches the setting temperature, the airflow volume will automatically change to low.
- Sleep Mode Operation time is 8 hours.
- When used together with the timer, the timer has priority.
- Cooling or Soft Dry Operation for sleep mode movement will start to avoid overcooling.


Setting temperature
Temperature
Approx. 0.5°C increase.
Approx. 0.5°C increase.
1 hour
Approx. 8 hours after sleep shift operation starts, stops automatically.
0-1 hour
Time
Sleep Operation button is pressed.
Sleep shift operation starts.

● Economy or Powerful Mode

Economy and Powerful operation cannot be selected simultaneously.



Economy Mode
To save electrical power consumption.
However, please use this mode when the room have reached your desired temperature.

- Press ECONOMY

※ Economy indicator (Green) on indoor unit lights up.

- Press once more to cancel this operation.

Powerful Mode
To obtain the setting temperature quickly.

- Press POWERFUL

※ Powerful indicator (Orange) on indoor unit lights up.

※ Powerful mode will operate for 15 minutes only.

- To cancel this operation, press once more.

■ Operation details

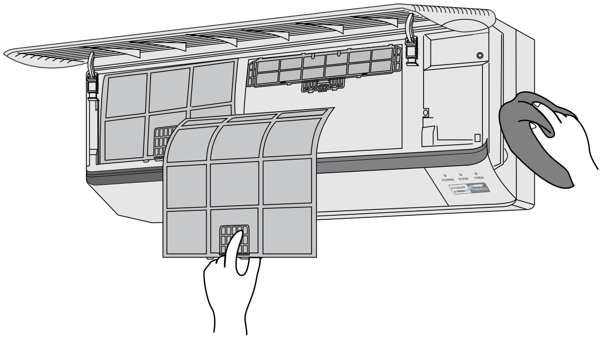
	Economy operation		Powerful operation	
	Temperature	Airflow volume	Temperature	Airflow volume
Cooling/Soft Dry	0.5°C higher than set temp.	Low (on and off)	3°C lower than set temp.	Super High

※
- The changes of the temperature and airflow volume are automatic.
- The remote control display remain unchanged.
- If sleep button or operation mode button is pressed, economy or powerful operation is cancelled.
- During FAN-Air circulation operation, the powerful and economy operation are not available.
- During Economy mode, indoor fan operates on and off at Low speed.

CARE AND MAINTENANCE

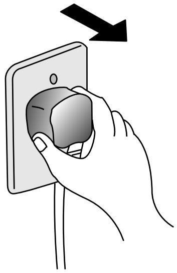
● Cleaning the Indoor Unit and Remote Control

- Wipe gently with a soft, dry cloth.
- Do not clean with water hotter than 40°C or with polishing fluids.
- The front panel can be removed and cleaned with water.



⚠ Caution

Switch OFF and unplug the power cord before cleaning the air conditioner.



● Cleaning the Air Filter

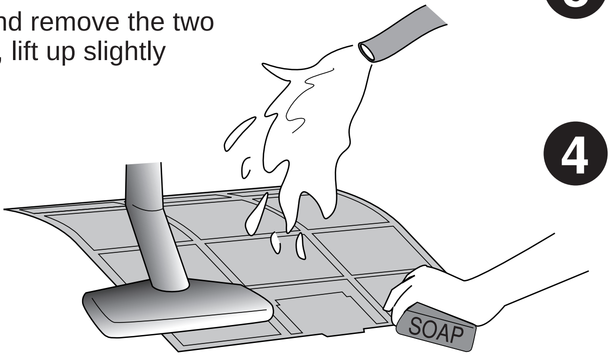
(Recommendation:- If the unit is operated in a dusty environment, clean the filters every two weeks, continuous use of this dirty filters will reduce cooling efficiency)

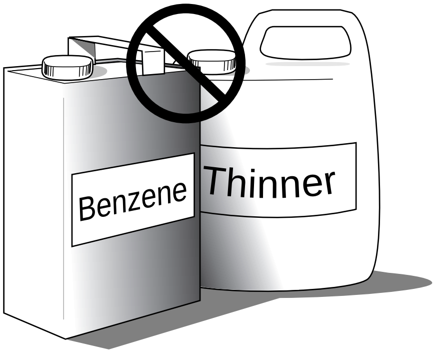
❶ Open the front grille and remove the two air filters. Hold the tab, lift up slightly then pull down.

❷ Remove dirt using a vacuum cleaner.

❸ Wash back of the air filter with water.

❹ If badly soiled, wash it with soap or a mild household detergent.





❺ Let it dry and reinstall it.
Be sure the “FRONT” mark is facing you.

※ **Damaged air filter.**
Consult the nearest authorized dealer.
Part No.: CWD00240.

- Do not clean using benzene, thinner, scouring powder or cloths soaked in caustic chemicals.

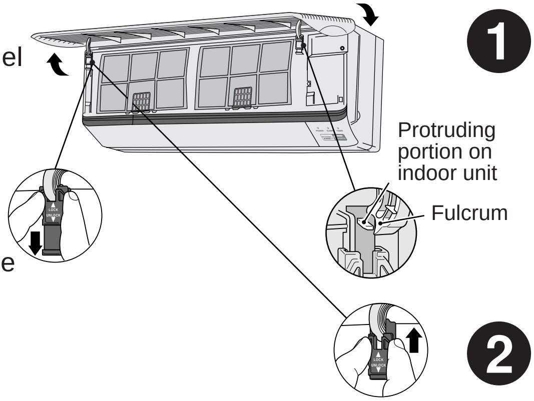
● Cleaning the Front Panel

(Must be removed before washing)

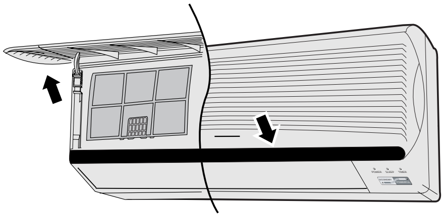
⚠ Caution

- Stand on a level surface when removing the front panel.
- Do not touch the metal parts in the indoor unit after removing the front panel.
- Do not leave water on the panel after cleaning. Dry thoroughly to prevent electric shock.

■ Removing the front panel



1. Raise the front panel to its full extent.
2. Slide the two tabs (left and right) to the UNLOCK position.



3. Raise the front panel to a position slightly higher than horizontal and pull to remove.

■ Fixing the front panel

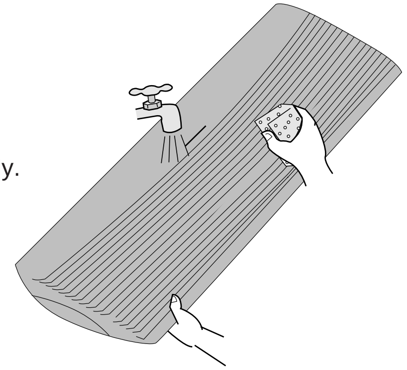
1. Raise the front panel horizontally, match the protruding portion on the indoor unit to the fulcrum and push into place.
2. Slide the two tabs up to the Lock position. (Click sound)

Note: If the tabs are left in the UNLOCK position, the front panel will not close.

※ If the panel does not close completely, check the tabs positions and try again.

■ Cleaning the front panel

- Gently wash with water and a sponge. (Do not use a scrubbing brush or other hard cleaning aids).
- Do not press the front panel too hard when washing. (Excess pressure may damage the panel).
- When cleaning with kitchen cleaning fluids (neutral detergents), rinse thoroughly. (Do not use non neutral detergents)
- Do not dry the front panel in direct sunlight. (Exposure to direct sunlight may discolor or deform the panel).

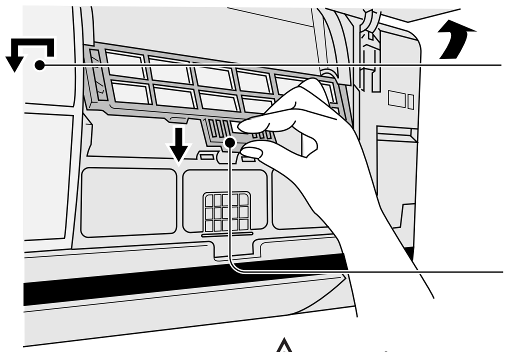


● Replacing the Air Purifying Filters

(Once every 3 month)

- Do not reuse dirty filters. Consult the nearest authorized dealer. (Air Purifying filter No. CZ-SFD50N)
- These filters function effectively for not more than three months.
- If the air conditioner operates with dirty filters:-
  - Air is not purified
  - Cooling capacity decreases
  - Foul odours are emitted
- Note:
  Catechin is natural brown element. The filter is coated with catechin in order to prevent the growth of bacteria and viruses.

■ Removing the air purifying filters



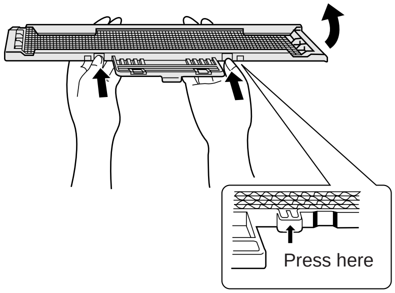
❶ Raise the front panel to its full extent.

❷ Remove the air filters (left and right).
- Lift up slightly then pull down

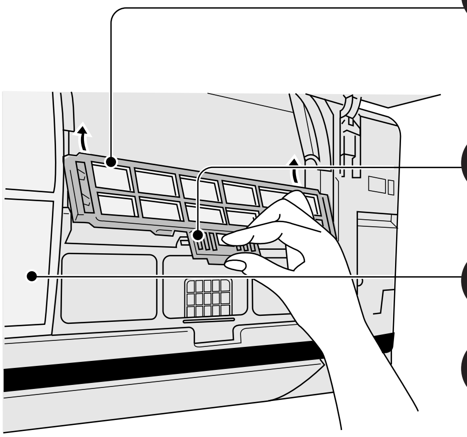
❸ Hold the tabs of the air purifying filters and pull.

⚠ Caution - Be careful not to hurt your hands on metal parts.

■ Reinstalling the air purifying filters



❶ Open the filter frame to insert the new filters.
- Deodorizing Filter (Black in colour)
- Catechin Air Purifying Filter (Brown in colour)



❷ Insert the new air purifying filter.
(Be sure the “FRONT” mark is facing you)

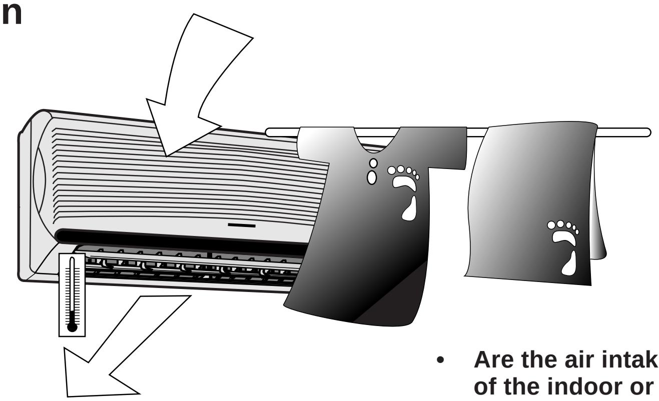
❸ Push until you hear a click.

❹ Reinsert the air filters.

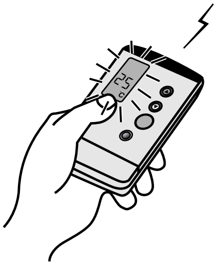
❺ Close the front panel .

● Pre-season Inspection

- **Is the discharge air cold?**
  Operation is normal if 15 minutes after the start of operation, the difference between the air intake and outlet vents temperatures is 8°C or above for cooling.



- **Are the air intake or outlet vents of the indoor or outdoor units obstructed?**



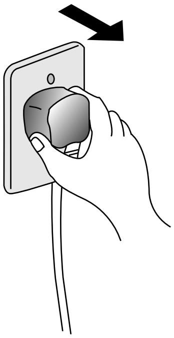
- **Are the remote control batteries weak?**
  If the remote control display appears weak, replace the batteries (page 49).

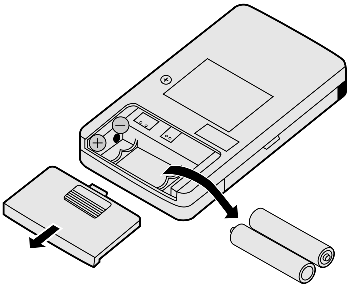
● When the Air Conditioner is Not Used For an Extended Period of Time

1 To dry the internal parts of the indoor unit, operate the unit for 2 - 3 hours using **FAN** operation.

2 Turn off the power switch and remove the power supply plug.
Note: If the unit is not switched off by the remote control, it will start operating when you plug in (because a Auto Restart Control is provided).

3 Remove the remote control batteries.





● Recommended Inspection

- The unit will become dirty after use over several seasons, reducing performance.
  Depending on the operation condition, a dirty unit may produce foul odours and dust may pollute the dehumidifying drainage.
  Seasonal inspection is recommended, in addition to regular cleaning. Consult an authorized dealer.

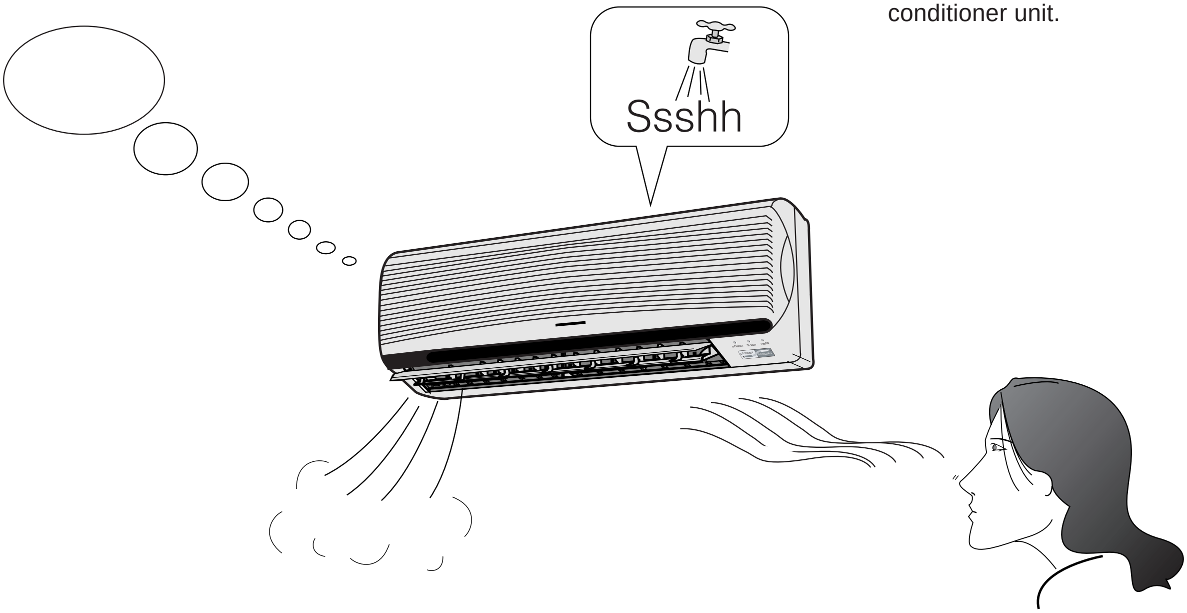
TROUBLESHOOTING

Normal Operation

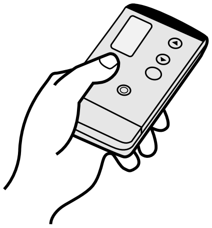
Q - Is it okay? **A** - This is the answer.

Q - Air conditioner has been restarted, but does not operate for 3 minutes.
A - This is to protect the air conditioner. Wait until the air conditioner begins operating.

Q - A sound like water flowing can be heard.
A - This is the sound of refrigerant flowing inside the air conditioner unit.



Q - It seems that fog is coming out from the air conditioner.
A - Condensation occurs when the airflow from the air conditioner cools the room air.



Q - The room has a peculiar odour.
A - This may be a damp smell emitted by the walls, carpet, furniture or clothing in the room.

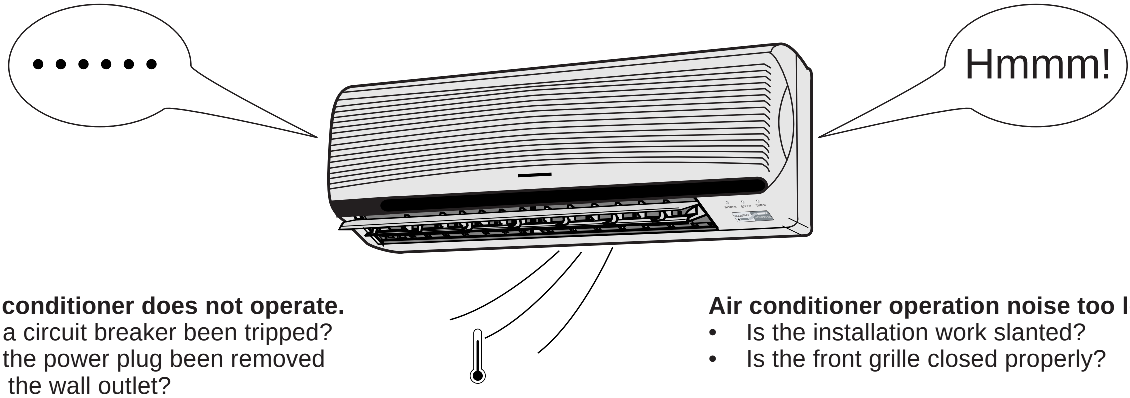
DRY

Q - During soft dry mode operation the air conditioner stops.
A - Soft Dry Mode operation is a very gentle cooling operation consisting primarily of dehumidifying. The air conditioner may stop for approximately 6 minutes in order to prevent overcooling. If the room temperature rises again, the operation will recommence.

AUTO FAN

Q - During Automatic Vertical Airflow setting, indoor fan stops occasionally.
A - This is to remove the smell emitted by the surroundings.

Abnormal Operation



The air conditioner does not operate.
- Has a circuit breaker been tripped?
- Has the power plug been removed from the wall outlet?
- Is the timer being used correctly?

Air conditioner operation noise too loud.
- Is the installation work slanted?
- Is the front grille closed properly?

The air conditioner does not cool effectively.
- Has the temperature been set incorrectly?
- Are the filters dirty?
- Are the intake or outlet vents of the outdoor unit obstructed?
- Are all windows and doors closed?

Call the Dealer Immediately

If the following conditions occur, immediately turn off the main power supply and unplug.

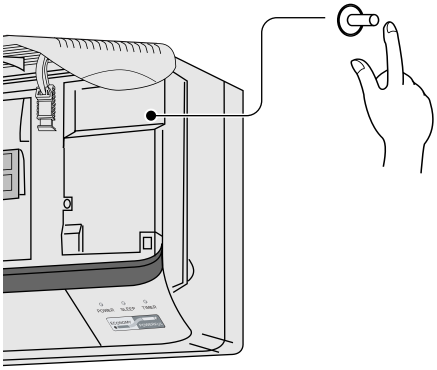
- Abnormal noise is heard during operation.
- Water or foreign material gets into the remote control by mistake.
- Water leaks from the indoor unit.

1
2
3
4
5
6
7
8
9
0

- Switches or buttons do not operate properly.
- The circuit breaker switches off frequently.
- Power supply cord and plug become unusually warm.

HELPFUL INFORMATION

Auto Operation Button



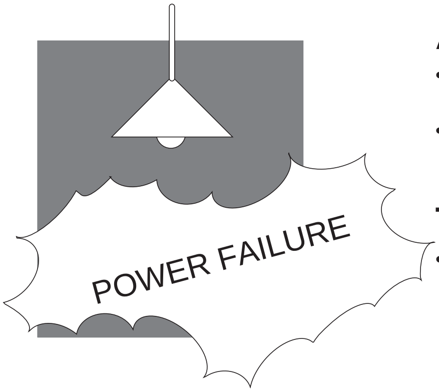
■ Automatic Operation

- If the remote control fails to function or misplaced, press Auto Operation button for Automatic operation.
- The Automatic operation will be activated immediately once the Auto operation button is pressed. However, temperature cannot be adjusted in this operation.
- The power LED on the indoor unit blinks until the operation mode is selected automatically.
- To cancel this operation, press once more.

■ Remote Control Signal Receiving Sound

- To switch off the beep (Signal Receiving Sound),
  press this Auto Operation button for 10 seconds continuously or longer.
  “Beep”, “beep” sound will be heard at the tenth seconds.
  Note: “Beep” sound will be heard at the fifth seconds;
  However please press continuously until you heard “beep” , “beep” sound.
- Repeat this, if you want to switch on the Signal Receiving Sound.

※ Note: If you press this button continuously for 5 to 10 seconds, Test Run operation will be performed. A “beep” sound will be heard at the fifth seconds, to identify the starting of Test Run operation.
(This is for Servicing purpose only.)

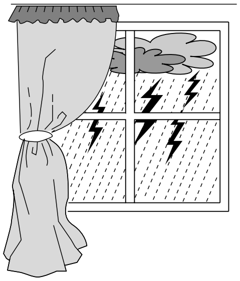


Auto Restart Control

- If power is resumed after a power failure, the operation will restart automatically after 3 - 5 1/2 minutes.
- Operation will be automatically restart under the previous operation mode and airflow direction when power is resumed as the operation is not stopped by remote control.

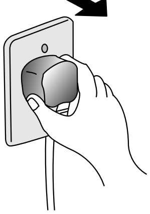
Timer Setting

- When power failure occurs, the timer setting is cancelled. Once power is resumed, reset the timer.

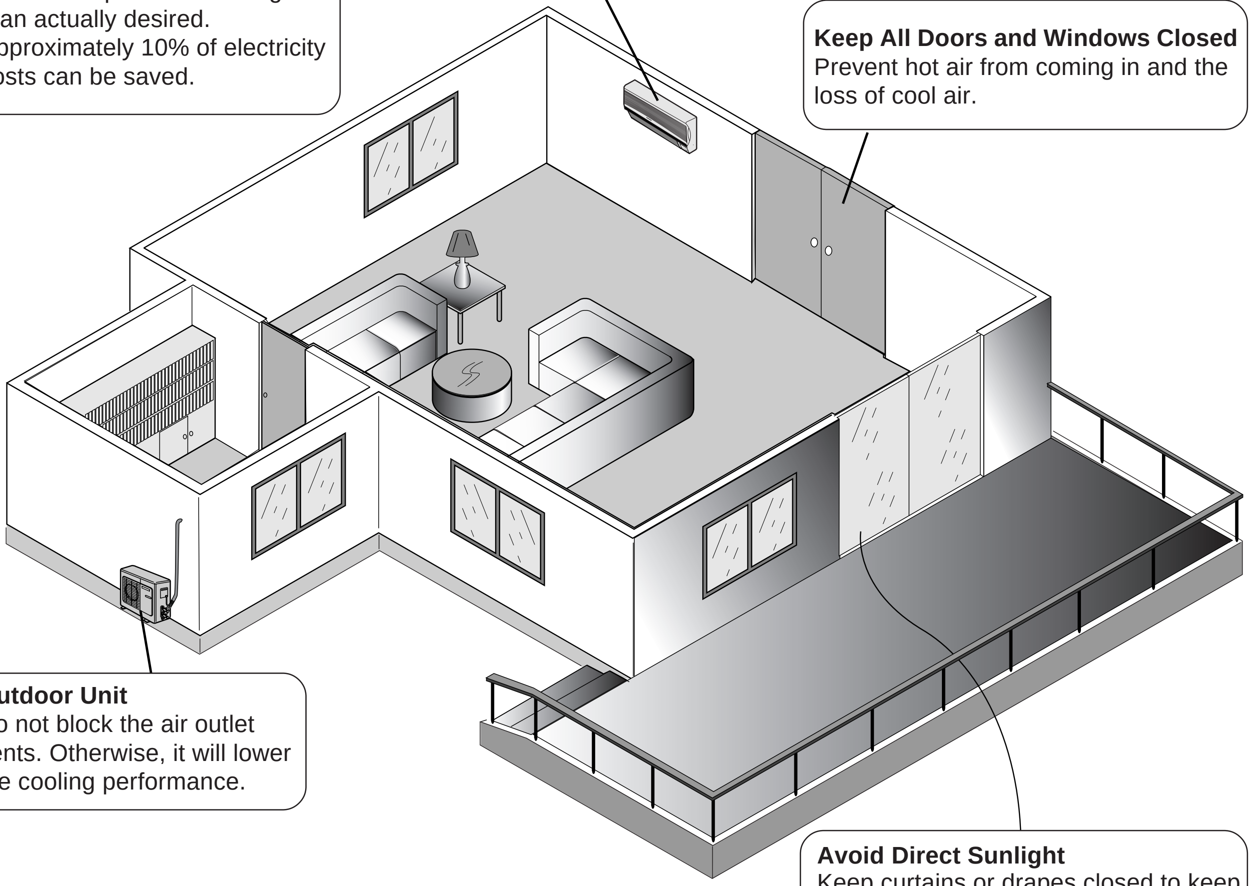


Thunder and Lightning

- This air conditioner is equipped with a built-in surge protective device. However, in order to further protect your air conditioner from being damaged by abnormally strong lightning activity, you may switch off the main power supply and unplug from power socket.



ENERGY SAVING AND OPERATION HINTS



Air Filter and Air Purifying Filter
Clean the air filter every 2 weeks and change the Air Purifying Filter every 3 months. Dirty filter may reduces cooling efficiency.

Setting Temperature
Set the temperature 1°C higher than actually desired. Approximately 10% of electricity costs can be saved.

Keep All Doors and Windows Closed
Prevent hot air from coming in and the loss of cool air.

Outdoor Unit
Do not block the air outlet vents. Otherwise, it will lower the cooling performance.

Avoid Direct Sunlight
Keep curtains or drapes closed to keep out direct sunlight during cooling operation.

Timer and Sleep Mode
To prevent wastage of electricity, use sleep mode when sleeping or Timer when going out to save electricity cost.

⚠ Warning

1) This appliance must be earthed.

2) If the supply cord is damaged or need to be replaced, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

3) Remove power plug or disconnect from the mains before servicing this appliance.

4) Do not repair by yourself.
In case of malfunction of this appliance, do not repair by yourself.
Contact to the sales dealer or service dealer for a repair.

5) Do not use in an explosive atmosphere.

Do not use this appliance in a potentially explosive atmosphere.

6) Turn off the power (Isolation from main power supply).
Pull off the power plug from the receptacle, or switch off the breaker, or switch off the power disconnecting mean to isolate the equipment from the main power supply in case of an emergency.

⚠ Caution

DISCONNECT THE MAINS PLUG FROM THE SUPPLY SOCKET WHEN NOT IN USE, WHERE SUPPLY CONNECTION IS VIA MAINS PLUG.

Airborne noise.
A-weighted sound pressure level of this appliance is less than 70dB (A) under the JIS C 9612 test conditions.
Maximum cooling operation
1 m from the unit

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Green and Yellow : Earth
Blue : Neutral
Brown : Live

“As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

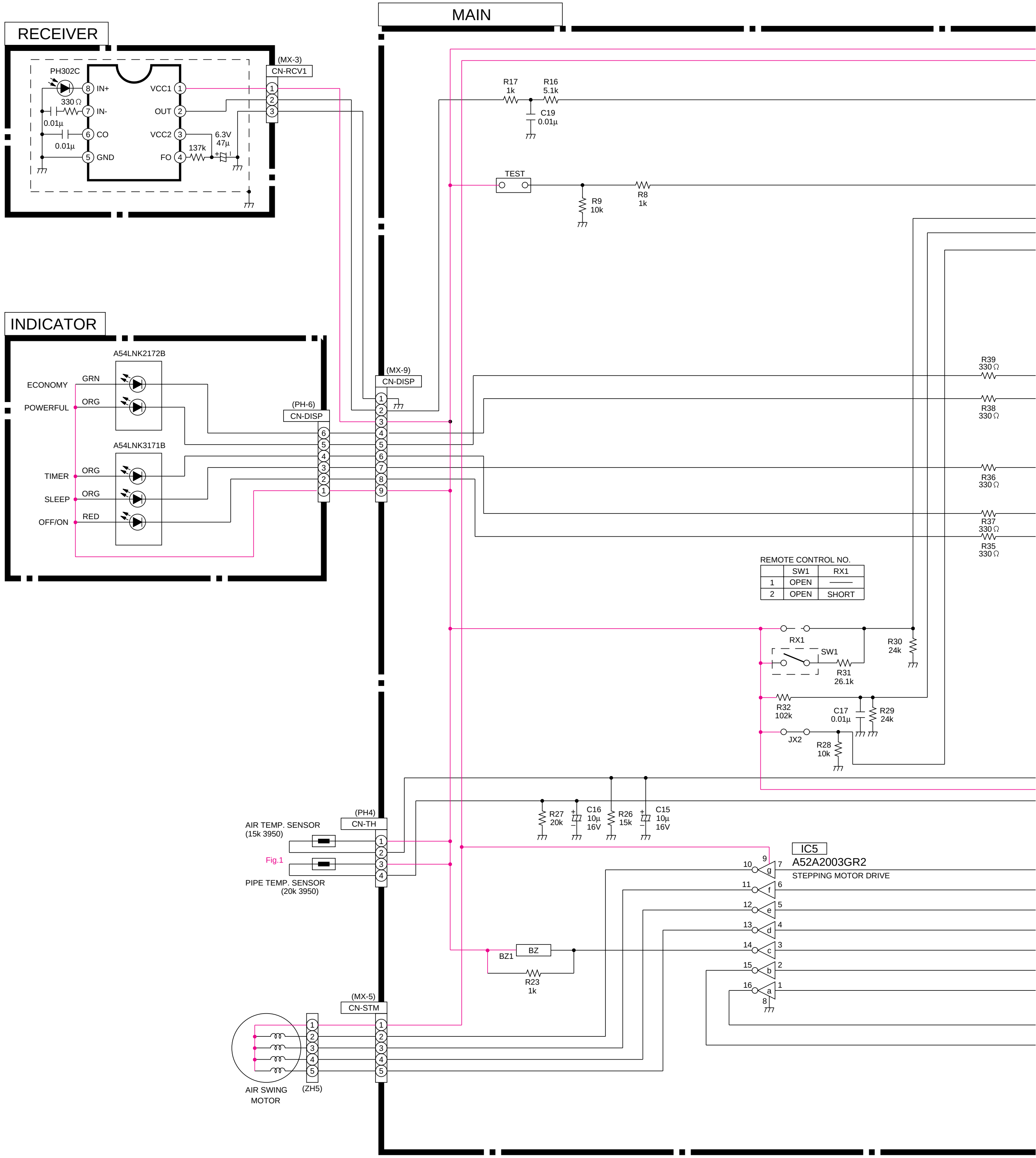
The wire which is coloured green and yellow must be connected to the terminal in the plug which is marked by the letter E or by safety earth symbol ⏚ or coloured green or green and yellow.

The wire which is coloured blue must be connected to the terminal which is marked with letter N or coloured black.

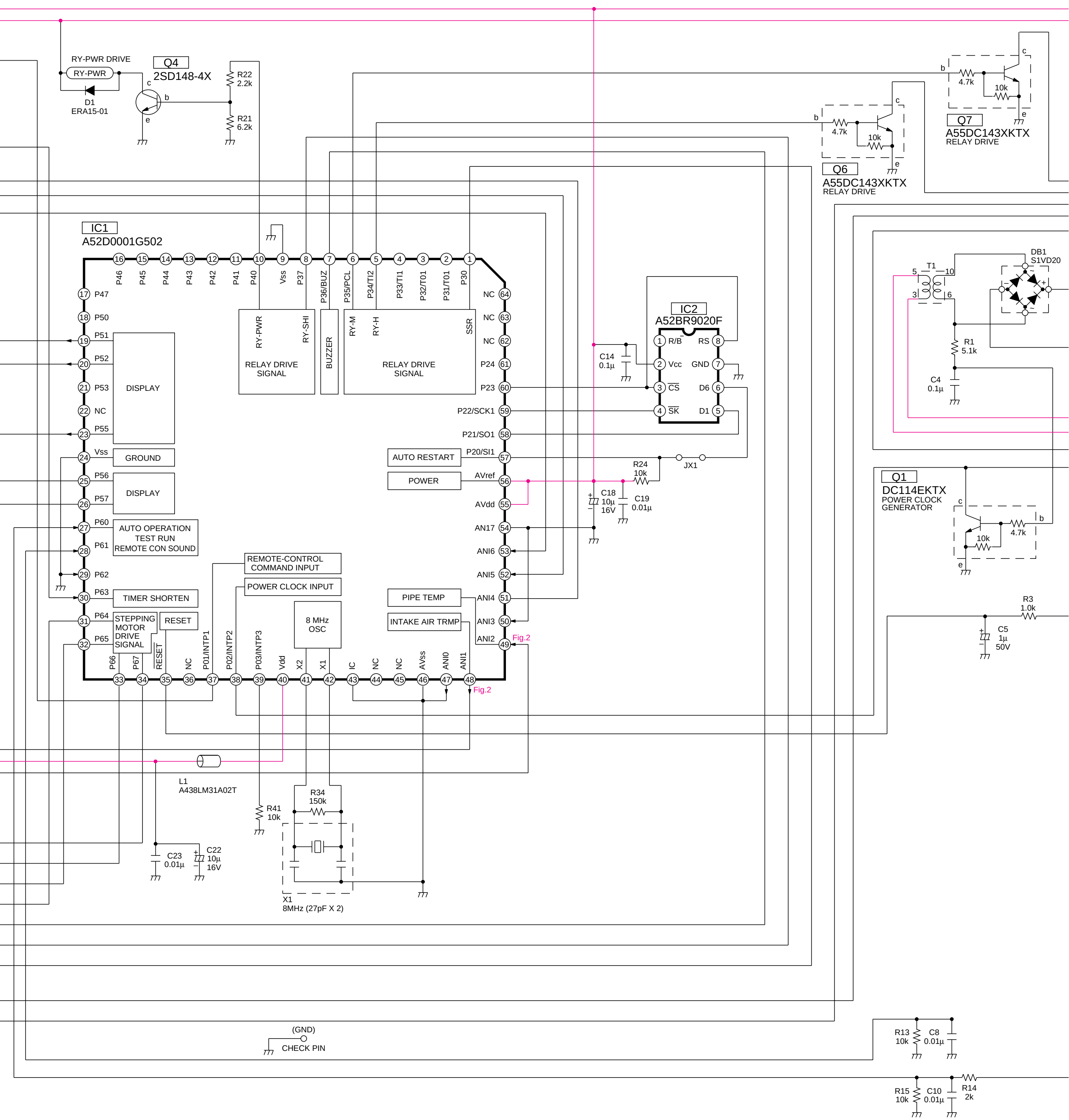
The wire which is coloured brown must be connected to the terminal which is marked with letter L or coloured red.”

• CS-MC95KE / CU-MC145KE
• CS-MC95KE / CU-MC185KE
• CS-MC95KE / CU-3MC205KE
• CS-MC125KE / CU-MC245KE
• CS-MC76KE
• CS-MC126KE / CU-MC196KE

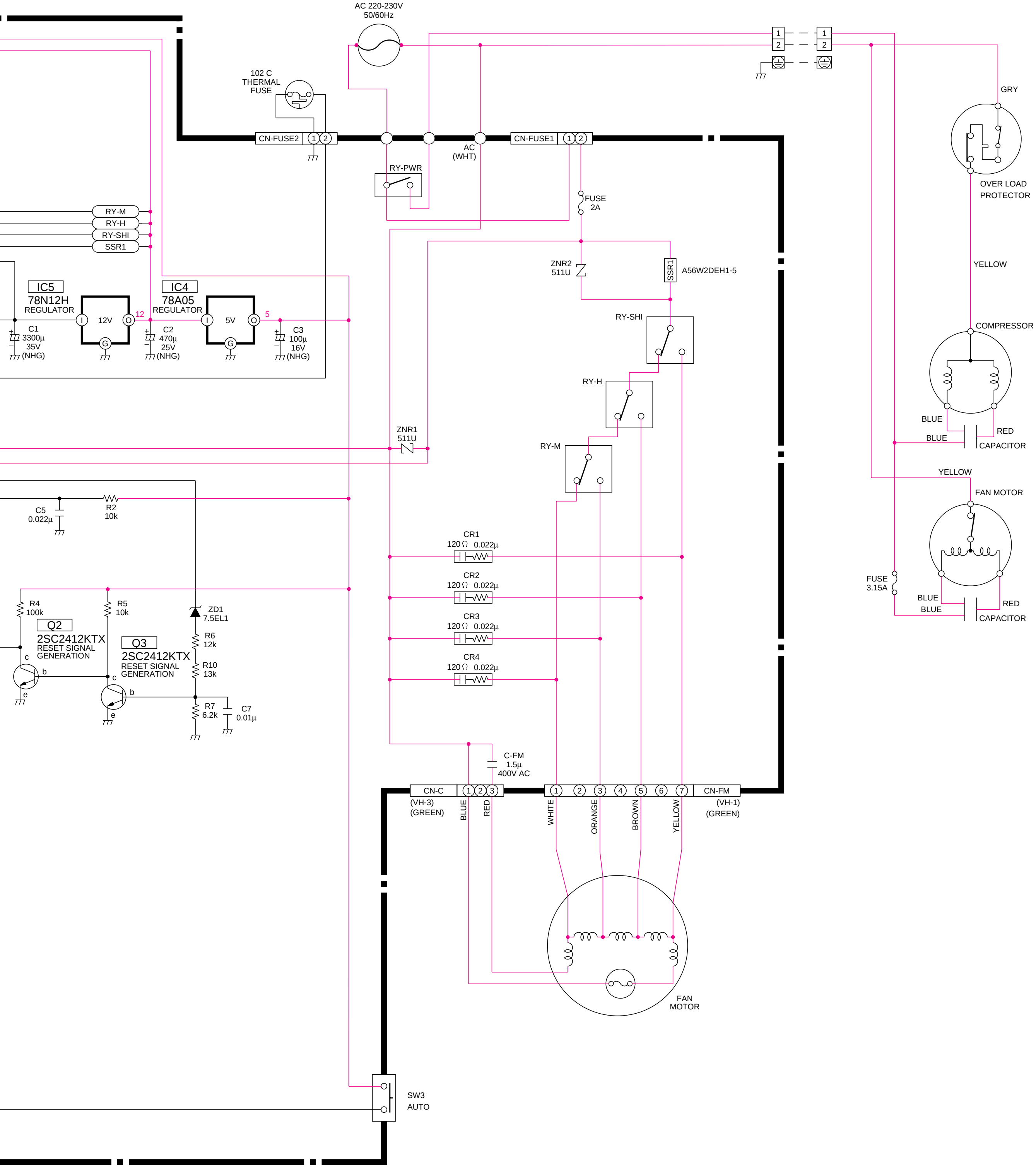
SCHEMATIC DIAGRAM 1/3


MAIN
RECEIVER
PH302C
8 IN+
7 IN-
6 CO
5 GND
VCC1 1
OUT 2
VCC2 3
FO 4
330Ω
0.01µ
0.01µ
137k
6.3V
47µ
(MX-3)
CN-RCV1
R17
1k
R16
5.1k
C19
0.01µ
TEST
R9
10k
R8
1k
INDICATOR
A54LNK2172B
ECONOMY
GRN
POWERFUL
ORG
A54LNK3171B
TIMER
ORG
SLEEP
ORG
OFF/ON
RED
(PH-6)
CN-DISP
(MX-9)
CN-DISP
R39
330Ω
R38
330Ω
R36
330Ω
R37
330Ω
R35
330Ω
REMOTE CONTROL NO.
SW1
RX1
1 OPEN ———
2 OPEN SHORT
RX1
SW1
R31
26.1k
R30
24k
R32
102k
C17
0.01µ
R29
24k
JX2
R28
10k
R27
20k
C16
10µ
16V
R26
15k
C15
10µ
16V
(PH4)
CN-TH
AIR TEMP. SENSOR
(15k 3950)
Fig.1
PIPE TEMP. SENSOR
(20k 3950)
IC5
A52A2003GR2
STEPPING MOTOR DRIVE
BZ
BZ1
R23
1k
(MX-5)
CN-STM
AIR SWING
MOTOR
(ZH5)

SCHEMATIC DIAGRAM 2/3


RY-PWR DRIVE
RY-PWR
D1
ERA15-01
Q4
2SD148-4X
c
b
e
R22
2.2k
R21
6.2k
IC1
A52D0001G502
16 P46
15 P45
14 P44
13 P43
12 P42
11 P41
10 P40
9 Vss
8 P37
7 P36/BUZ
6 P35/PCL
5 P34/TI2
4 P33/TI1
3 P32/T01
2 P31/T01
1 P30
17 P47
18 P50
19 P51
20 P52
21 P53
22 NC
23 P55
24 Vss
25 P56
26 P57
27 P60
28 P61
29 P62
30 P63
31 P64
32 P65
33 P66
34 P67
35 RESET
36 NC
37 P01/INTP1
38 P02/INTP2
39 P03/INTP3
40 Vdd
41 X2
42 X1
43 IC
44 NC
45 NC
46 AVss
47 ANI0
48 ANI1
49 ANI2
50 ANI3
51 ANI4
52 ANI5
53 ANI6
54 AN17
55 AVdd
56 AVref
57 P20/SI1
58 P21/SO1
59 P22/SCK1
60 P23
61 P24
62 NC
63 NC
64 NC
RY-PWR
RY-SHI
RELAY DRIVE SIGNAL
BUZZER
RY-M
RY-H
SSR
RELAY DRIVE SIGNAL
DISPLAY
GROUND
DISPLAY
AUTO OPERATION TEST RUN REMOTE CON SOUND
TIMER SHORTEN
STEPPING MOTOR DRIVE SIGNAL
RESET
REMOTE-CONTROL COMMAND INPUT
POWER CLOCK INPUT
8 MHz OSC
AUTO RESTART
POWER
PIPE TEMP
INTAKE AIR TRMP
Fig.2
Fig.2
IC2
A52BR9020F
1 R/B
2 Vcc
3 CS
4 SK
8 RS
7 GND
6 D6
5 D1
C14
0.1µ
R24
10k
JX1
C18
10µ
16V
C19
0.01µ
L1
A438LM31A02T
R41
10k
R34
150k
C23
0.01µ
C22
10µ
16V
X1
8MHz (27pF X 2)
(GND)
CHECK PIN
Q7
A55DC143XKTX
RELAY DRIVE
4.7k
10k
Q6
A55DC143XKTX
RELAY DRIVE
4.7k
10k
T1
5
10
3
6
DB1
S1VD20
R1
5.1k
C4
0.1µ
Q1
DC114EKTX
POWER CLOCK GENERATOR
10k
4.7k
R3
1.0k
C5
1µ
50V
R13
10k
C8
0.01µ
R15
10k
C10
0.01µ
R14
2k

SCHEMATIC DIAGRAM 3/3


AC 220-230V
50/60Hz
1
2
1
2
GRY
102 C
THERMAL
FUSE
CN-FUSE2
1
2
AC
(WHT)
CN-FUSE1
1
2
OVER LOAD
PROTECTOR
RY-PWR
FUSE
2A
RY-M
RY-H
RY-SHI
SSR1
ZNR2
511U
SSR1
A56W2DEH1-5
YELLOW
IC5
78N12H
REGULATOR
12V
12
IC4
78A05
REGULATOR
5V
5
I
O
G
C1
3300µ
35V
(NHG)
C2
470µ
25V
(NHG)
C3
100µ
16V
(NHG)
RY-SHI
COMPRESSOR
RY-H
BLUE
BLUE
RED
CAPACITOR
ZNR1
511U
RY-M
YELLOW
FAN MOTOR
C5
0.022µ
R2
10k
CR1
120Ω 0.022µ
CR2
120Ω 0.022µ
FUSE
3.15A
BLUE
BLUE
RED
CAPACITOR
CR3
120Ω 0.022µ
R4
100k
R5
10k
ZD1
7.5EL1
Q2
2SC2412KTX
RESET SIGNAL
GENERATION
Q3
2SC2412KTX
RESET SIGNAL
GENERATION
R6
12k
R10
13k
CR4
120Ω 0.022µ
c
b
e
R7
6.2k
C7
0.01µ
C-FM
1.5µ
400V AC
CN-C
1
2
3
1
2
3
4
5
6
7
CN-FM
(VH-3)
(GREEN)
BLUE
RED
WHITE
ORANGE
BROWN
YELLOW
(VH-1)
(GREEN)
FAN
MOTOR
SW3
AUTO